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BACTERIAL MENINGITIS

A COMPARATIVE STUDY OF VARIOUS THERAPEUTIC MEASURES

CARLO J. TRIPOLI, M.D.
NEW ORLEANS

There are comparatively few conditions that offer the clinician more formidable problems than do the various types of bacterial meningitis. It is true that the diagnosis of inflammations of the meninges does at times tax diagnostic acumen, but repeated examination of the spinal fluid will, in most instances, clarify the situation. However, the major problems and those which cause the greatest concern are such as pertain to treatment. Many authors, at various times, have suggested different forms of therapy; this alone indicates that the therapeutic management of meningitis has been far from satisfactory. Even the cases of cerebrospinal fever, for which are employed rather potent specific antiserums and antitoxins, result in many fatalities.

The records of all cases of bacteria-incited meningitis treated in the Charity Hospital during the last ten years have been reviewed in order to determine the distribution of the etiologic types, the various therapeutic procedures employed and the end results. During the last several years it has been my privilege either to institute therapeutic measures in such cases at the Charity Hospital directly or else to observe their use by my colleagues. A total of 468 such cases (table 1) were diagnosed during that period. For simplicity of presentation, the cases have been classified on the basis of bacteriologic manifestations and will be discussed on the same basis.

CEREBROSPINAL FEVER

Two hundred and twenty-one of the cases were cerebrospinal fever (acute epidemic cerebrospinal meningitis) with a mortality of 65.15 per cent. Except those in which death occurred shortly after admission, all patients received polyvalent antimeningococcus serum by some route. The antimeningococcus serums employed were prepared by five commercial biologic laboratories; the mortality rate was uninfluenced by the type of serum used.

Chart 1 shows the distribution of the cases of cerebrospinal fever on the basis of age, sex and color. In general, the disease was severer and the mortality higher in babies and young children. With older persons the prognosis was decidedly more favorable.

Therapeutic Management.—Six different methods of treatment (table 2) were employed; serum administration was the basis of five of these. Most of the patients treated by drainage through simple lumbar tap were moribund on admission and died immediately thereafter. The high mortality rate among cases so treated should therefore not be considered a true index of the efficacy of the method.

Most patients were treated by intravenous, intramuscular and intraspinal injections of serum after withdrawal of as much spinal fluid as possible. Usually the amount of serum given intraspinally was from 10 to 15 cc. less than the amount of fluid withdrawn. Serum injections were repeated at intervals of from twelve to twenty-four hours. This method is rather simple. With it, however, no attempt is made to maintain the normal spinal fluid pressure, and it is difficult for the serum to reach the ventricles, not to mention the more important cerebral subarachnoid spaces. At autopsy the latter spaces in a large number of the cases so treated were found to be filled with purulent exudate, particularly those over the frontal lobes. True, some of the serum injected intravenously does finally reach the ventricles and cortex of the brain, but it is so diluted as to lessen considerably whatever therapeutic value it may have.

Because of these disadvantages, serum in fifty-four cases was injected intracisternally as well as intraspinally, the two procedures being alternated every twelve to twenty-four hours. The mortality of the cases so treated was 48.14 per cent. In five cases the intracisternal route alone was used, owing to the presence of a spinal subarachnoid block. All these patients died.

The Lyon[1] "substitution" method of administering serum was used in two cases. With this method, by means of a combined ventricular and lumbar puncture, antiserum containing a phenolphthalein indicator is permitted to flow into the ventricle as the spinal fluid escapes from the lumbar needle until the serum appears at the lumbar site. Both children so treated died of toxemia. Autopsy revealed no evidence of hemorrhage and surprisingly little reaction of the brain substance traversed by the needle in reaching the ventricle.

Because of the difficulties of the Lyon method, a simple modification, retaining its basic principle, was sought. This method, for convenience, is called the "modified substitution" method. Briefly, its technic is as follows:

With the patient lying on his side and the head of the table elevated about 9 inches, a needle is introduced into the basal cistern and another into the lumbar cistern. The spinal fluid is then allowed to flow from

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The author is indebted to Drs. G. S. Bel, J. H. Musser and J. G. Stulb for their kind permission to include in this series the cases assigned to their services.

Read before the Section on Nervous and Mental Diseases at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Lyon, G. M.: Serum Therapy in Meningococcus Meningitis, Am. J. Dis. Child. **43**: 572-576 (March) 1932; The Administration of Serum in Meningitis, South. M. J. **25**: 818-825 (Aug.) 1932.

both needles. Usually the flow from the basal cistern ceases first. As soon as this occurs, and while the fluid still flows from the lumbar tap, the antiserum, heated to body temperature and containing a few drops of Dandy's phthalein indicator, is allowed to flow into the basal cistern. The table is then immediately lowered

TABLE 1.—*Incidence of Bacterial Meningitis in Charity Hospital, 1925-1934 Inclusive*

Type	Number of Cases	Per Cent of Total	Deaths	Mortality Rate
Meningococcus (N. intracellularis)	221	47.20	144	65.15%
Pneumococcus (D. pneumoniae)				
Type I	8	1.70		
Type II	5	1.06		
Type III	8	1.70		
Type (?)	90	19.23		
	111	13.69	110	99.09%
Tuberculous (M. tuberculosis-hominis?)	51	10.89	51	100.00%
Streptococcus viridans	3	0.64		
Streptococcus haemolyticus	2	0.42		
Streptococcus, type (?)	19	4.05		
	24	5.11	22	91.66%
Haemophilus influenzae	20	4.27	20*	100.00%
Staphylococcus aureus	4	0.85		
Staphylococcus, type (?)	5	1.06		
	9	1.91	9	100.00%
Bacillus pyocaneous (Pseudomonas aeruginosa)	4	0.85	3	75.00%
Mixed staphylococci, type (?), and H. influenzae	1	0.21	1	100.00%
Mixed pneumococci, type (?), and H. influenzae	1	0.21	1	100.00%
Purulent bacterial meningitis (type of organism not reported)	26	5.55	26	100.00%
Total number of cases	468			

* One of these patients with influenzal meningitis, following a pansinusitis, apparently recovered and was discharged. Six months later another attack occurred and the patient died soon after admission. Autopsy was not permitted.

so that the foot is elevated 6 inches higher than the head, the serum continuing to flow into the cistern until it fills the ventricles and appears at the lumbar tap. From 50 to 80 cc. of antiserum is usually given intravenously, and from 50 to 100 cc. intramuscularly at the same time. Nineteen successive cases were treated by this method, the mortality rate (42.10 per cent) being lower than that with any other treatment method.

TABLE 2.—*Results of Various Types of Serum Therapy in Cases of Cerebrospinal Fever*

Type of Serum Therapy	Number of Cases	Died	Recovered	Mortality Rate
Simple lumbar drainage	14	14	0	100.00%
Lumbar drainage with repeated injections intraspinally, intravenously and intramuscularly	130	87	43	66.92%
Repeated injections, intraspinally and intracisternally	54	26*	28	48.14%
Only two or three injections, by combined lumbar and cistern puncture (modified "substitution")	19	8*	11	42.10%
Repeated injections intracisternally alone, because of spinal block	5	5	0	100.00%
Repeated injections into ventricles by combined ventricular and lumbar punctures	2	2	0	100.00%

* In four of a total of thirty-four cases, at autopsy, the basal cistern was found filled with clotted blood. In all cases serum was also given intravenously and intramuscularly.

Naturally, no definite conclusions can be drawn from such a small series.

The temperature records of three typical cases of varying severity are presented in charts 2, 3 and 4, illustrating the effects of this method of serum administration.

It would appear that this method is simpler and requires less experience than the original "substitution" method and consequently should be attended with less danger. However, the difficulty usually encountered is that of performing the cistern puncture. Even with faultless technic, one or two vessels of the small plexus present in the roof of the cistern may be ruptured, resulting in rather extensive intracisternal hemorrhage. This occurred in four of the cases, and at autopsy blood clots not only filled the cistern but had dissected around the anterior surface of the medulla. Certainly this added medullary compression presented a contributory, if not the actual, cause of death.

In order to avoid this danger as far as possible, special attention was given to the size and bevel of the

TABLE 3.—*Results of Various Therapeutic Procedures in Bacterial Meningitis (Exclusive of Cerebrospinal Fever)*

Type of Therapeutic Procedure*	Type of Infection	Number of Cases	Recovered
Modified "substitution," using polyvalent antimeningococcus serum via combined lumbar and basal cistern puncture	Strep. type (?)	5	1
	Staph. type (?)	3	0
	Pneumo. type I	2	0
	Pneumo. type III	1	1
	Pneumo. type (?)	4	0
	B. pyocyaneus (P. aeruginosa)	1	1
Modified "substitution," using antimeningococcus serum as above; also intracarotid injection of Pregl's solution of iodine	Strep. viridans	1	1
	Pneumo. type (?)	3	0
	Strep. type (?)	4	0
Modified "substitution," as above; also intracarotid injection of Pregl's solution of iodine and acriflavine 1% solution	Pneumo. type (?)	3	0
	Strep. type (?)	1	0
Complete "substitution," using antimeningococcus serum via combined ventricular and lumbar puncture	Pneumo. type (?)	2	0
Permanent and forced drainage of basal cistern (Haynes' operation); in pneumococcic case, type I, antiserum given I. V. and I. S.	Pneumo. type I	1	0
	H. influenzae	1	0
Antipneumococcus serum, type I, I. V. and I. S.	Pneumo. type I	3	0
Polyvalent antipneumococcus serum, I. V., I. C. and I. S.	Pneumo. type (?)	17	0
Pneumococcus immunogen, I. S.	Pneumo. type (?)	2	0
Ethylhydrocupreine hydrochloride, orally and I. S.	Pneumo. type (?)	2	0
Convalescent serum, I. S. and I. M.	H. influenzae	2	0
Metaphen (10 cc. 0.1% solution) I. V.	H. influenzae	1	0
Mercurochrome (20 cc. 1% solution) I. V. and I. S.	Strep. type (?)	2†	0
Polyvalent streptococcus antiserum I. V. and I. S.	Strep. type (?)	2	0
Hexylresorcinol (10 cc. 0.1% solution) I. S.	Pneumo. type II	1†	0
	Pneumo. type (?)	1†	0
Simple lumbar drainage. Also all other cases of bacterial meningitis	H. influenzae	1‡	0

* I. C. indicates intracisternally; I. S., intraspinally; I. V., intravenously; I. M., intramuscularly.

† Immediate death.

‡ Patient had five recurrent attacks of meningitis, each following pansinusitis. Haemophilus influenzae found during fourth attack. Patient recovered completely after this attack but died six months later after fifth attack.

needles used. However, even with needles specially constructed, intracisternal hemorrhages occurred.

Recently, Danna [2] has replaced infected spinal fluid with air in cases of bacterial meningitis other than cerebrospinal fever. He seats the patient in an upright position, and as the spinal fluid is withdrawn from the lumbar cistern in quantities of 10 cc. he replaces it with air. It seemed that antiserum in cases of cerebrospinal fever might be similarly administered with advantage. Accordingly, after the spinal fluid was replaced with sterile air the buttocks of the patient were raised and the air was replaced with antiserum. The procedure is simple and from the results obtained in a few cases appears to offer considerable promise.

2. Danna, J. A.: Unpublished data.

Encouraging indeed is Hoyne's [3] report of considerable reduction in the mortality rate following the use of antitoxin prepared by Ferry,[4] as compared to that obtained with antiserums. I have instituted a comparative study of antitoxin and antiserum administered by various methods. The results will be reported later.

OTHER TYPES OF BACTERIAL MENINGITIS

Unfortunately, these types of meningitis are so frequent and their end results so uniformly fatal that recovery usually warrants special reports. Always of particular interest, naturally, is the therapeutic method employed in any case in which recovery has occurred, and throughout the literature numerous reports may be found advocating different types of treatment.

Neal [5] and Williams [6] have reported satisfactory results following the use of experimental specific antiserums in some cases caused by organisms of the pneumococcus, streptococcus and Haemophilus influenzae groups. Unfortunately, such antiserums are not generally available. Their need, if preliminary reports are confirmed, is obvious.

The work of Kolmer [7] and Stewart [8] in the treatment of such cases occurring spontaneously in human beings or induced experimentally in animals embraces not only the use of a wide variety of chemotherapeutic and serologic agents but also different drainage methods. These results are undoubtedly encouraging and stimulating, but lack of frequency and uniformity of recoveries following any method advocated is indeed disappointing.

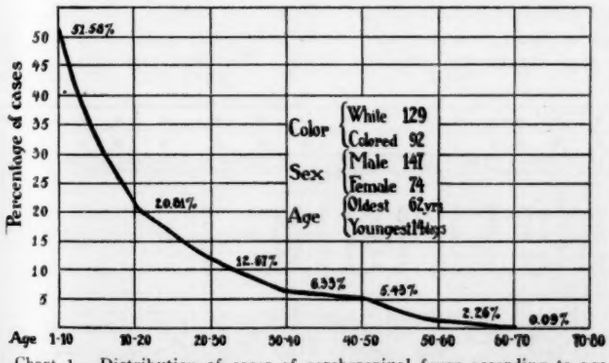

Chart 1.—Distribution of cases of cerebrospinal fever according to age, sex and color.

As shown in table 1, 247 of the cases observed were caused by organisms other than the meningococcus. These cases were treated by different methods, involving the administration of various specific and nonspecific serums and chemical agents, with various means of drainage. These therapeutic measures will be briefly discussed.

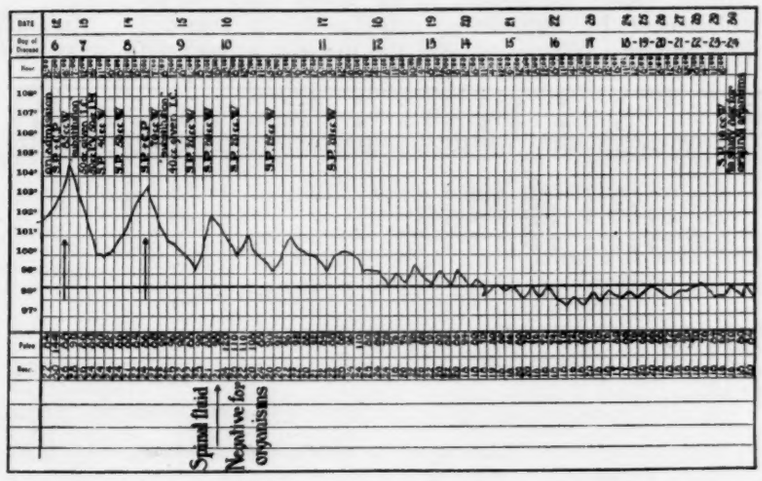

Chart 2.—Cerebrospinal fever. In this and the following charts *C. P.* indicates basal cistern puncture; *S. P.*, lumbar cistern puncture; *I. M.*, intramuscularly; *I. V.*, intravenously; *I. S.*, intraspinally; *W*, spinal fluid withdrawn; "substitution," modified substitution. The arrows on the base line indicate injections of antiserum.

1. *Simple Lumbar Drainage.*—One hundred and eighty-one cases of bacterial meningitis were treated by this method, with recovery in only one case, caused by Haemophilus influenzae.

2. *Intraspinal Administration of Chemical Agents.*—Ethylhydrocupreine hydrochloride, metaphen, mercurochrome and hexylresorcinol were used in seven cases, with no recoveries. Four deaths occurred so quickly after administration of the chemical that it was deemed inadvisable to treat any other case in this manner.

3. *Specific and Nonspecific Serums and Vaccines in Pneumococcic Meningitis.*—Pneumococcus immunogen repeatedly injected intraspinally was used in two cases. Polyvalent antipneumococcus serum was repeatedly administered intraspinally, intracisternally and intravenously in seventeen cases. Antipneumococcus type I serum was given intravenously and intraspinally in three cases of type I infection. All patients so treated died. Quite striking were the severe serum reactions, sometimes causing death, observed with many.

4. *Permanent and Forced Drainage of Basal and Lumbar Cistern.*—Kubie [9] pointed out the advantage of forced drainage. He reported recovery in five cases so studied; in three of these, however, no organisms were demonstrable in smear or culture. Haynes [10] and Dandy [11] recorded several cases in which recovery followed this type of therapy. Spurling [12] also reported success following drainage instituted by laminectomy. The two cases in this series so treated ended fatally.

5. *Surgical Drainage of Focus; Replacement of Spinal Fluid by Nonspecific Serum With and Without Intracarotid Injection of Chemical Agents.*—As emphasized by many authors, the value of surgical

3. Hoyne, A. L.: Meningococcic Meningitis, J. A. M. A. **104**: 980-983 (March 23) 1935.

4. Ferry, N. S.: Meningococcus Antitoxin: I. Prophylactic and Therapeutic Tests on Guinea-Pigs, J. Immunol. **23**: 315 (Oct.) 1932; II. Therapeutic Tests on Monkeys, ibid. **23**: 325 (Oct.) 1932; III. Further Tests on Monkeys, ibid. **26**: 133 (Feb.) 1934.

5. Neal, Josephine B.; Jackson, H. W., and Appelbaum, Emanuel: Influenzal Meningitis: Study of 111 Cases with Four Recoveries, J. A. M. A. **102**: 513-518 (Feb. 17) 1934; A Comprehensive Study of Meningitis Secondary to Otitic or Sinus Infection, Ann. Otol., Rhin. & Laryng. **43**: 658 (Sept.) 1934.

6. Williams, Anna W.: Bacteriology of Meningitis Following Otitis Media and Related Infections, Ann. Otol., Rhin. & Laryng. **43**: 667-671 (Sept.) 1934.

7. (*a*) Kolmer, J. A.: The Intracarotid Method of Treatment of Meningitis, with Recoveries, J. A. M. A. **96**: 1358-1361 (April 25) 1931; (*b*) New Methods for the Prophylaxis and Treatment of Meningitis, with Special Reference to Streptococcus and Pneumococcus Meningitis, Laryngoscope **42**: 12-33 (Jan.) 1932; (*c*) The Chemotherapy and Serum Therapy of Pneumococcus and Streptococcus Meningitis: I. Arch. Otolaryng. **3**: 481 (June) 1926; (*d*) Kolmer, J. A.; Rule, Anna M., and Madden, Bernard: VI. The Cerebral-Cisternal-Spinal Lavage Method of Treatment for Septic Meningitis, ibid. **9**: 428 (April) 1929.

8. Stewart, F. W.: The Production, Pathology and Treatment of Type I Pneumococcal Meningitis in Dogs, J. Exper. Med. **46**: 409 (Sept.) 1927.

9. Kubie, L. S.: Forced Drainage for the Treatment of Meningitis Secondary to Ear and Sinus Infections, Ann. Otol., Rhin. & Laryng. **43**: 692-701 (Sept.) 1934.

10. Haynes, I. S.: The Surgical Treatment of Meningitis: Its Scope and Accomplishment, Laryngoscope **22**: 865-912, 1912.

11. Dandy, W. E.: Treatment of Staphylococcus and Streptococcus Meningitis by Continuous Drainage of the Cisterna Magna, Surg., Gynec. & Obst. **39**: 760 (Dec.) 1924.

12. Spurling, R. G.: The Surgical Treatment of Meningitis, with Report of Cases, Kentucky M. J. **26**: 242 (May) 1928.

drainage of foci of infection is obvious. Whether or not removal of the infected cerebrospinal fluid and its replacement with nonspecific serum or another fluid as a form of subarachnoid lavage [7d] is beneficial may be conjectured. However, although it is probable that immune bodies are present in the spinal fluid and its replacement by nonspecific immune serum removes these immune substances, still the mechanical removal

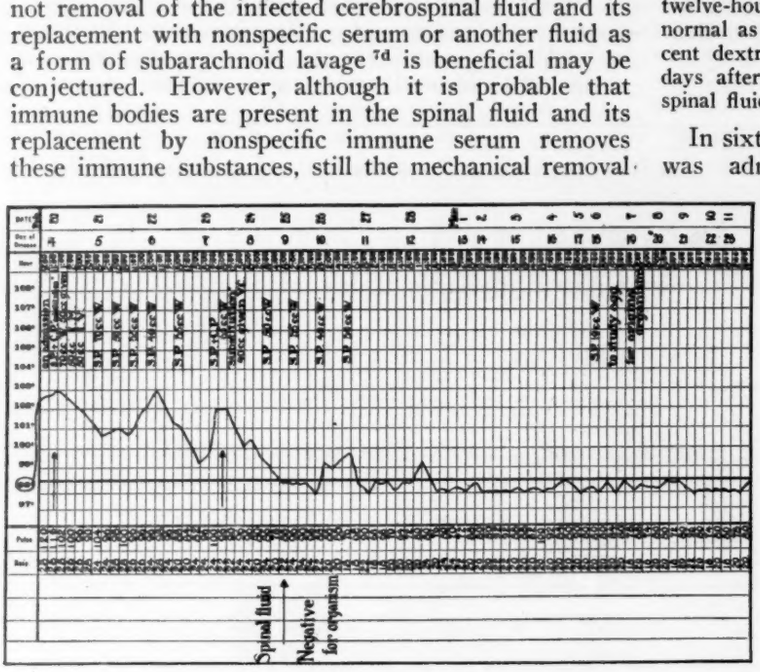

Chart 3.—Cerebrospinal fever.

of the bacteria by lavage may be of distinct value. As suggested by Felsen and Osafsky,[13] nonspecific serum increases phagocytosis and inhibits the growth of organisms. Be that as it may, several reports [14] have appeared of recovery in nonmeningococcic cases of meningitis following the use of polyvalent antimeningococcus serum alone or in conjunction with other specific serums. Kolmer [7a] showed that Pregl's solution of iodine or acriflavine may be advantageously injected into the common carotid or internal carotid arteries in such cases. Ersner and Myers [15] noted experimentally that, although intracarotid injection traumatized the artery, no permanent injury resulted. It is reasonable to assume that in addition to their bacteriostatic property such chemical substances may stimulate phagocytosis. All four cases in which 1 per cent acriflavine solution was so used ended fatally. Only one of eight cases in which Pregl's solution of iodine in addition to nonspecific serum was used ended in recovery:

H. G., a white girl, aged 12 years, presented a clinical picture of meningitis following left otitis media, which had been treated by means of incision and drainage of the tympanic membrane at onset. Spinal fluid examination showed Streptococcus viridans. Blood culture was negative. Mastoidectomy was performed and all cells were removed. The left common carotid artery was exposed, and 10 cc. of warmed Pregl's solution of iodine was slowly injected. Intracarotid injections were repeated on two succeeding days. Combined cistern and lumbar puncture, and a "modified substitution" method of drainage using polyvalent antimeningococcus serum were performed, and repeated every five days for three doses. Spinal drainage by lumbar taps was done at twelve-hour intervals to keep the spinal fluid pressure as near normal as possible. A total of from 4,000 to 5,000 cc. of 10 per cent dextrose and saline solutions was given daily. Thirteen days after admission, no organisms were demonstrable in the spinal fluid.

In sixteen cases, polyvalent antimeningococcus serum was administered by the "modified substitution" method, after surgical removal of the focus. No intracarotid injections were given. Three of the patients recovered. The salient features are herewith recorded:

H. C., a white youth, aged 16, admitted with meningitis, showed nonhemolytic streptococci in the spinal fluid. Blood cultures remained sterile. At the time of admission and again at the end of four days, combined cistern and lumbar punctures were done as described, and the spinal fluid was replaced by polyvalent antimeningococcus serum. During the interim, a daily total of from 4,000 to 5,000 cc. of 10 per cent dextrose and saline solution was given orally, intravenously and subcutaneously. Lumbar taps were done every twelve hours to maintain the spinal fluid pressure as near normal as possible.

The day after the second administration of serum the spinal fluid was negative for organisms, and ten days after admission the patient was on the road to recovery.

H. H., a Negress, aged 32, was admitted with the diagnosis of chronic recurrent appendicitis. An appendectomy was performed under procaine hydrochloride spinal anesthesia. Six days later the patient complained of severe backache, headache, nausea and vomiting. Opisthotonos was present, accompanied by exquisite tenderness over the third lumbar vertebra. Spinal and cisternal fluids revealed type III Diplococcus pneumoniae. By means of combined basal cistern and lumbar punctures, the spinal fluid was replaced with polyvalent antimeningococcus serum, as in the previous cases. This was repeated on the

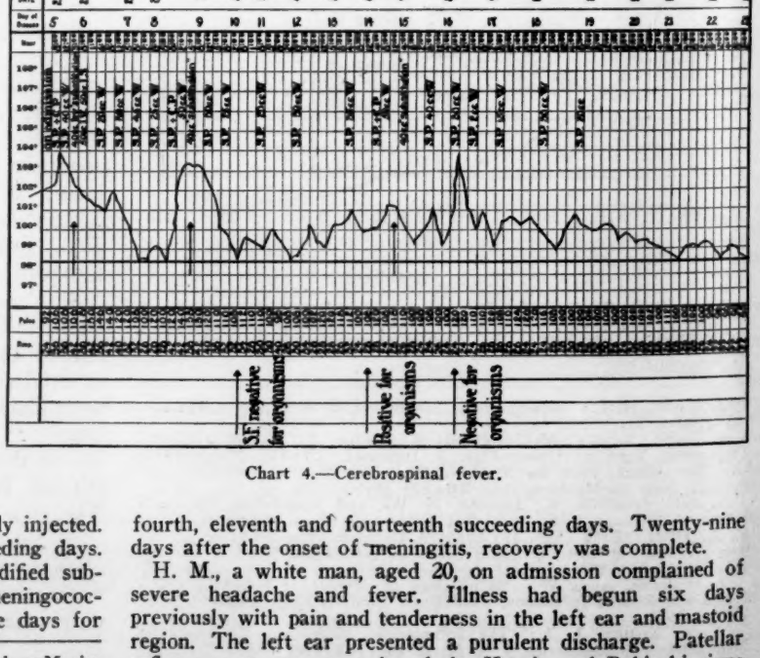

Chart 4.—Cerebrospinal fever.

fourth, eleventh and fourteenth succeeding days. Twenty-nine days after the onset of meningitis, recovery was complete.

H. M., a white man, aged 20, on admission complained of severe headache and fever. Illness had begun six days previously with pain and tenderness in the left ear and mastoid region. The left ear presented a purulent discharge. Patellar reflexes were exaggerated and the Kernig and Babinski signs were positive on both sides. Cultures from the spinal fluid revealed Pseudomonas aeruginosa (Bacillus pyocyaneus). Mastoidectomy was done and polyvalent antimeningococcus serum was given by a combined lumbar and basal cistern puncture. Four days after the operation, the spinal fluid was sterile.

13. Felsen, Joseph, and Osafsky, A. G.: Streptococcus Viridans Meningitis, with Recovery: Immunologic Studies, J. A. M. A. **102**: 2170-2171 (June 30) 1934.

14. Rennie, J. K., and Craig, W. A.: Case of Streptococcal Meningitis, Lancet **1**: 524 (March 11) 1933. Ebert, E.: Un cas de méningite purulente à streptocoques suivie de guérison, Acta oto-laryng. **15**: 104-105, 1931.

15. Ersner, M. A., and Myers, David: Changes Noted in the Carotid Following Intracarotid Therapy, Tr. Am. Laryng., Rhin. & Otol. Soc. **39**: 377-387, 1933.

SUMMARY AND CONCLUSIONS

1. A review and comparative study of the therapeutic regimen employed in 468 cases of bacterial meningitis treated in the state Charity Hospital of Louisiana at New Orleans during the period 1925-1934 revealed that the mortality rate for cerebrospinal fever was 65.15 per cent and for other types of bacterial meningitis 98.38 per cent.

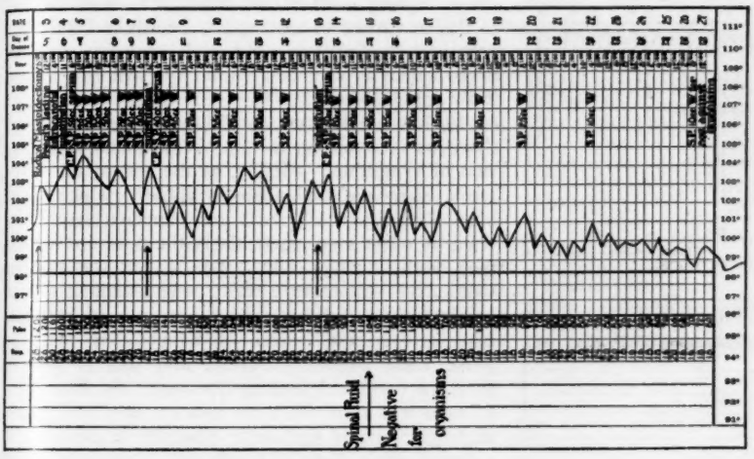

Chart 5.—Streptococcic meningitis.

2. Numerous methods of specific antiserum administration have advantages and disadvantages.

3. The value of antiseptic chemical agents in bacterial meningitis, other than cerebrospinal fever, is believed to be limited to bacteriostasis and stimulation of phagocytosis.

4. The newer therapeutic methods described and their suggested modifications constitute attempts at overcoming the dangers and supplementing the inadequacies of the older methods.

5. The therapeusis of bacterial meningitis is generally unsatisfactory. In four cases other than cerebrospinal fever, treatment by spinal lavage with nonspecific serum and eradication of primary foci of infection was successful.

ABSTRACT OF DISCUSSION

DR. JOHN H. MUSSER, New Orleans: After observing the results obtained in the patients we have had at Charity Hospital, it is with a good deal of skepticism that I believe that intensive treatment does very much for patients who have meningitis. I think it perfectly possible that very often they might recover merely with lumbar drains, and on the other hand there are certain patients for whom nothing can be done. A young man after playing baseball ate a healthy supper and then had a headache. In two hours he was unconscious and twelve hours later he was dead. A young woman lay in a hospital for ten weeks with a fever of undetermined origin until somebody thought that she possibly might have a meningeal infection. A lumbar tap was done and it was found that she had cerebrospinal meningitis. She recovered with one or two lumbar taps. It so happened that when she had her meningitis she also was pregnant, and she gave birth to a child a few months later. It does seem that very little can be done in spite of all forms of treatment in the bacterial types, other than the meningococcic. One of the recognized dangers of the combined cisterna-lumbar puncture is the danger of cerebellar herniation. Years ago I was attempting to treat a Negro patient who was getting along nicely. As is well known, in pneumococcic meningitis there is a partial block, and I was attempting to wash it away with a sodium chloride solution. I pressed a little more vigorously and withdrew the syringe more quickly than I should, and the patient died right there and then. Although his heart kept on for two or three minutes after he stopped breathing, nothing could bring him back. This is an ever present danger in treatment by the method Dr. Tripoli finds most satisfactory in the handling of patients with meningitis. I have had one of the house officers in three instances attempt a permanent cisternal drainage. Unfortunately the patients were moribund when the operation was performed. Two of them died immediately and one died shortly afterward. I can't help but feel, however, that that particular method should be employed more than it is. I believe that in some institutions at the present time that particular technic is being carried out in the treatment of the patient with meningitis. Invariably the patient who recovers is the patient who has a remarkable freedom from the encephalitic symptoms. If a child comes into the hospital ward in active delirium, it is going to die. If a child comes in with a clear mentality, it has an excellent chance for recovery.

DR. JOSEPHINE B. NEAL, New York: It seems to me that it has not been sufficiently emphasized that there is real danger in doing a cisternal puncture on a patient suffering from meningitis. That danger does not exist, at least to anything like the same degree, in a patient suffering from cerebrospinal syphilis. When a patient is suffering from meningitis the meninges are much congested and there may be a thick purulent exudate in the region. I have been told of probably twenty-five or thirty instances in which death has followed and been due to cisternal punctures in the hands of competent physicians, so that I am shocked when I go into hospitals and find that cisternal punctures are done by house doctors who have had no experience on the cadaver. While cisternal punctures should be done when they are indicated, I think they should not be resorted to lightly. In discussing cerebrospinal fever, Dr. Tripoli and I didn't see why there was a much higher case fatality in New Orleans than in New York. Whether there is a different type of organism in New Orleans that is not sufficiently well represented in the serum I do not know. The method employed at several hospitals in New York in treating meningitis is to give serum only intraspinally unless we are sure that a septicemia is present, in which case serum is given intravenously as well. We usually do not give serum intraspinally oftener than once a day. If block does occur and it is in a young child, we resort to ventricular puncture rather than cisternal, for two reasons: it is safer and it is surer, since the block may quite as well be above the cistern as below it. In the treatment of other forms of bacterial meningitis any method of treatment that does not seem to promise

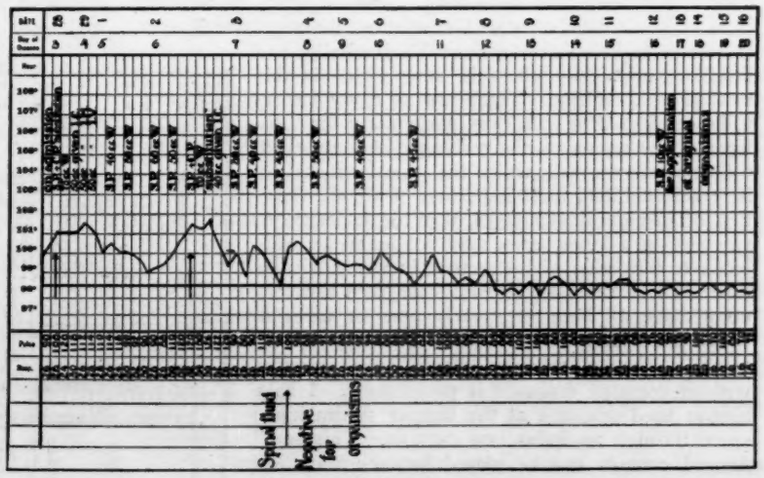

Chart 6.—Streptococcic meningitis.

actual harm to the patient is justified. Quite a few patients with various forms of bacterial meningitis have recovered—I think twelve cases of streptococcic meningitis and five due to the influenza bacillus. I thought there were two reasons why these patients recovered. One was that the infecting organism was fortunately of a rather low degree of virulence, and the other that the focus of infection was eradicated surgically or else subsided spontaneously. Perhaps the only two cases in

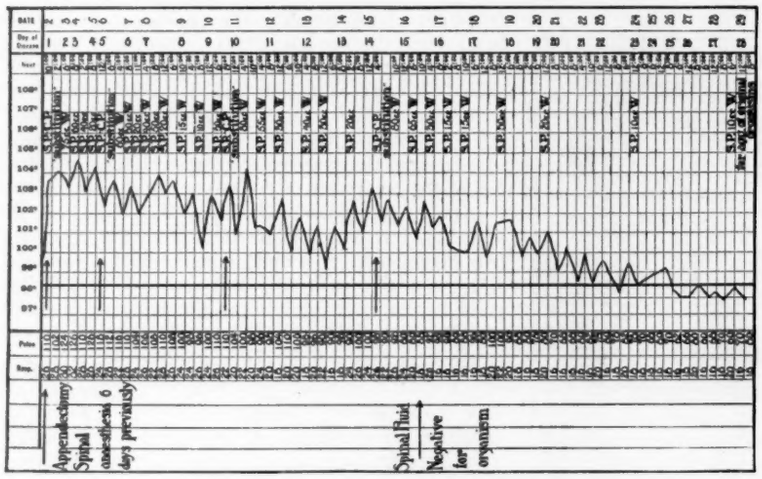

Chart 7.—Pneumococcic (type III) meningitis.

which I felt rather sure that the treatment was of value, except for repeated lumbar punctures and rather thorough draining, were two in which the streptococcic meningitis followed scarlet fever. In these cases the antiscarlatinal serum was used, and I thought we had a right to assume that it may have had a specific effect.

DR. R. GLEN SPURLING, Louisville, Ky.: Of the first ten pyogenic meningitis cases (other than meningococcic) treated with constant drainage, recovery occurred in four. As a result of this experience, I was most enthusiastic about the method. During the last five years, some fifty cases have been thus treated with only two recoveries. The incidence of recovery from pyogenic meningitis with continuous drainage would seem, therefore, to be relatively low. Theoretically, and I believe practically, there is some virtue in this method of treatment. There are so many factors to be considered in each case, particularly the virulence of the organism, the resistance of the patient, the completeness with which the primary focus can be eradicated and, most important of all, the duration of meningeal symptoms, that the incidence of recovery in a large series may not be an accurate index to the value of the method in any particular case. Those cases in which I have seen recovery occur have all been very early ones or cases in which the primary focus could be thoroughly eradicated. Whether recovery would have occurred without constant drainage is problematic. I have always used drainage at the lumbar subarachnoid space through an indwelling cannula. This small flanged cannula can be placed between the third and fourth vertebrae with but little more trouble than inserting a lumbar puncture needle. Drainage through such a cannula can be kept going for many days. There is one virtue in continuous drainage which I believe makes the method worth while, even though its curative effects may be negligible. Certainly, the patients who are given continuous drainage are kept much more comfortable than those in whom repeated lumbar puncture is resorted to; their headache is diminished, their clouded mentality usually clears, and they seldom die in convulsions. If for no other reasons, I believe that the method is worth while.

DR. PETER BASSOE, Chicago: Last fall I was called to see a girl, aged 16 years, whom I found in bed, vomiting, with severe headaches, temperature of 104 and the spinal fluid containing some 300 or 400 cells, practically all lymphocytes. Clinically it looked like a case of tuberculous meningitis. Spinal fluid obtained by the next puncture contained no tubercle bacilli and the fluid showed a normal amount of sugar, and I realized that it was a case of lymphocytic meningitis. So the prognosis was changed and the patient recovered. There were at that time, in Chicago, I understand, perhaps half a dozen cases of that kind, some of them starting quite severely, all with lymphocytosis and normal sugar content, with recovery in all.

DR. ALFRED GORDON, Philadelphia: With regard to the treatment of meningitis, I wish to relate the result of treatment in influenzal meningitis in four cases which I have had within the last two years. Two patients died and two recovered. One, a girl of 16, had some nasal condition of long duration; there was fluctuation in improvement and aggravation of symptoms. Finally, at the end of the sixth week, she developed acute symptoms, which were very striking. All sorts of remedies had been tried by other men, particularly the nose and throat men, without any results. The patient was getting worse, the temperature was rising alarmingly, and particularly the disproportion and lack of parallelism between the degree of temperature and the pulse were unusually severe, and this is usually fatal. I instituted lumbar drainage. At first 5 cc. of fluid was removed three times a day, but immediately following the same quantity of physiologic solution of sodium chloride was injected. This procedure continued for two weeks. Encouraged by slight improvement, I increased the drainage to 10 cc., followed by 10 cc. of the sodium chloride solution. In the two cases, in which the treatment was absolutely identical, the result was unusually favorable.

DR. CARLO J. TRIPOLI, New Orleans: Acute encephalitic manifestations are not infrequently present in our cases of cerebrospinal fever. Dr. Musser stated that the presence of encephalitis in addition to meningitis in these cases is usually of serious prognostic importance. This observation is worthy of note, as the mortality rate is considerably higher in the cases so affected. As Dr. Neal suggests, there may be considerable difference between the organisms infecting our cases and those represented in the antiserum. Certainly, the organisms from various cases in each vicinity should be typed more specifically. Many strains have been isolated by the bacteriologists. Testing and incorporation of these strains in the manufacture of antiserum and antitoxin should be of distinct value. Increasing the spinal fluid drainage by forced fluid intake is quite advantageous in all types of bacterial meningitis. Dilution and mechanical removal of bacteria and their toxin are thereby facilitated. However, the value of operative procedures to facilitate drainage in cases of bacterial meningitis other than cerebrospinal fever remains to be proved.

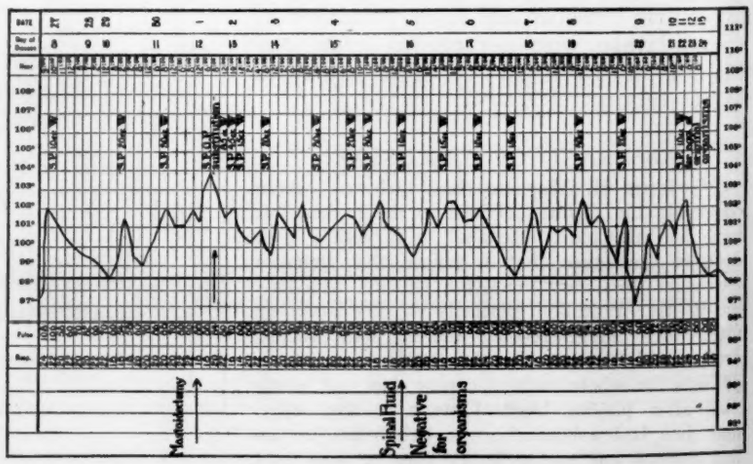

Chart 8.—Bacillus pyocyaneus (Pseudomonas aeruginosa) meningitis.

Perhaps, with the advent of more specific antiserums and antitoxins, the procedure will become more valuable. The diagnostic and prognostic value of spinal fluid dextrose and chloride determination has been pointed out on several occasions. A recent paper by Drs. Musser and Watkins regarding the prognostic influence of spinal fluid dextrose determinations in cases of cerebrospinal fever illustrates these observations quite well. The great difference between the mortality rate in cases of cerebrospinal fever in our locality and elsewhere may be accounted for, in part, by the fact that many patients are not taken to the hospital in the early stages of the disease. The Charity Hospital of Louisiana receives patients from the entire state. The patients are frequently treated at home for some time and then subjected to strenuous travel before being brought to the hospital for treatment. Although this fact probably does influence the mortality rate, I do not believe it to be wholly responsible.

PROTAMINE INSULINATE

H. C. HAGEDORN, M.D.
B. NORMAN JENSEN, M.D.
N. B. KRARUP, M.D.
AND
I. WODSTRUP
COPENHAGEN, DENMARK

When treating diabetes with insulin, one has to replace the regulated continuous secretion from the normal pancreas into the portal vein by a few daily injections into the subcutaneous tissue. This method is of course only a poor imitation of nature's own mechanism. Serious disturbances are avoided only because the organism has other means of regulating the blood sugar than to vary the rate of insulin secretion.

This is the reason why treatment with one or two injections daily is found to give fairly good results in many cases. In more severe cases, however, very pronounced oscillations of the blood sugar may occur. During the last few hours before the injection metabolic disturbances develop, which tend to minimize the available deposits of carbohydrate, strongly needed when the blood sugar runs low after the injection.

It is obvious that the insulin hydrochloride will rapidly become absorbed into the blood after the injection.

If the rate of absorption could be retarded, the aforementioned difficulties might possibly become greatly reduced.

In order to obtain such a retardation, different ways have been tried:

1. Injecting the insulin as a suspension or emulsion in oil or similar substances; e. g., Leyton [1] in 1929.

2. Injecting it together with vasoconstrictor substances (experiments in the Deaconess Hospital, Boston [2]).

3. Injecting an insulin compound, sparingly soluble in the tissue fluid.

The third method has been tried through several years in this institute but without success, until experiments made for other purposes indicated that a compound of insulin and nucleic acid had a more acid iso-electric zone than insulin itself. According to this experience it appeared that it might be possible also to combine the insulin with some basic group, so that the combination might get its iso-electric zone nearer to the p_H of the tissue fluid than the insulin hydrochloride.

In a compound of this type the insulin should act as an acid, while in insulin hydrochloride it acts as a base.

CHEMICAL INVESTIGATIONS

In order to realize this idea, different groups of substances have been tried, kyrin, histones, globins and protamines, but only the last mentioned group has given such solubility results that a clinical experiment has been found justified.

The knowledge of the protamines is rather old. Miescher, as early as 1868, produced salmine. Later on a number of protamines were produced (especially Kossel [3] and his co-workers) and their chemical constitution is now on the whole well known. Their properties as protein precipitants were first observed by Kossel, about 1890.

The protamines are divided into three groups, monoprotamines, diprotamines and triprotamines, according to their contents of one, two or three of the basic constituents lysin, arginine and histidine. A study of compounds between triprotamines and insulin is in progress, but on account of the difficulties in obtaining raw material no definite results are available so far. One compound of insulin and diprotamine (cyclopterin) has been investigated and proved to be far more soluble than the monoprotamine compounds, on which, therefore, our work has been concentrated.

Chart 1 shows the solubility of compounds of insulin and different monoprotamines prepared from the ripe sperm of the fish in question. The amount of the various protamins that combines with the insulin is about one-tenth the weight of the latter. The insulin

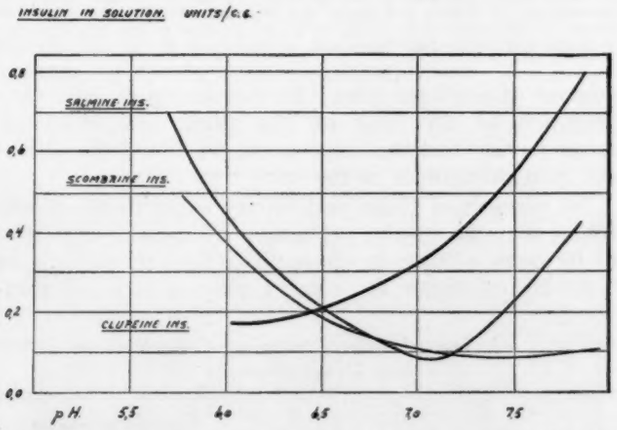

Chart 1.—Solubility of some protamine insulinate compounds in water at different p_H.

used was of purity. As one unit is about 0.04 mg., it appears from the figure that the solubility in water is of the same order of magnitude as that of barium sulfate.

An experiment carried out on a normal person showed no ill effect after far larger doses of clupeine than would be used by the insulin treatment and therefore a clinical experiment was made on a diabetic patient with the insulin clupeine compound in clear slightly acid solution, but without any effect different from that of ordinary insulin. This negative result is undoubtedly due to the proteins of the tissue fluid acting as protecting colloids and thus preventing the precipitation. Another experiment was made in which the reaction of the protamine insulinate solution was adjusted before injection to p_H 7.3, whereby the pro-

From the Steno Memorial Hospital.

1. Leyton, O.: The Administration of Insulin in Suspension, Lancet 1: 756-759 (April 13) 1929.
2. Clausen: Oral communication to the authors.
3. Kossel, Albrecht: The Protamines and Histones, New York, Longmans, Green & Co., 1928.

tamine insulinate is precipitated. As the result of the compound being injected as a suspension, the deposit in the subcutaneous tissue consists of a fluid of practically constant insulin concentration, from which the absorption takes place, and a steadily diminishing amount of solid particles. In this way a distinct prolongation of the time of absorption was observed. After having had this experience, we tested the different monoprotamines in the same way.

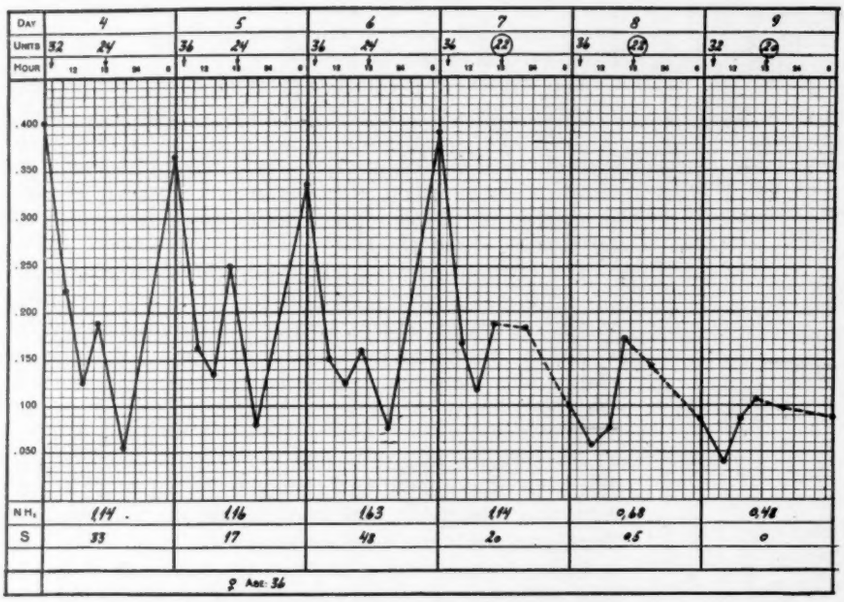

Chart 2.—Transition from a period in which the patient was treated with ordinary insulin to a period in which the patient was treated with protamine insulinate. Protamine insulinate was given on the last three days in the diagram. Explanation of this and the following diagrams: At the top are indicated the days of treatment concerned. Below is the insulin dose in international units. A circle round the figure indicates that protamine insulinate has been used. Under this, an arrow marks the time of the injection. In the coordinate system the blood sugar is given in percentages. A broken line means that protamine insulinate has been used. Below the coordinate system is the ammonia excretion in grams per twenty-four hours; under that the sugar excretion in grams per twenty-four hours and at the bottom the sex and age of the patient.

As a result of these preliminary experiments it was found that the insulin protamine compounds appeared to be more soluble in tissue fluid than in water. In order to investigate this more closely, a series of solubility experiments was carried out on different insulin protamine compounds in serum and serum dilutions.

Solubility of Some Insulin Protamine Compounds in Serum and Serum Dilutions

	p_H at Minimum Solubility	Insulin in Solution, Units per Cc.	
		Diluted Serum 25% Protein	Undiluted Serum 8% Protein
Clupeine	6.3	18	55
Scombrine	7.3	17	51
Salmine	7.3	14	50
New compound from salmo iridius	7.3	6	33

The solubility in serum has been determined by shaking an exactly known quantity of the recently precipitated protamine insulinate with a suitable volume of human serum for half an hour at 37 C. The mixture was centrifugated and the undissolved part was taken up in a known volume of acidified water. In the acid solution the contents of insulin are determined. The solubility is calculated from the difference between the original and the undissolved quantity, as shown in the table.

As the relative error of the biologic assay is the same whether the quantity of insulin to be estimated is large or small, the experiments are carried out in such a way that the quantity of undissolved precipitate is small, whereby the most exact results are obtained.

Recently a protamine not described before in the literature, prepared from the sperm of Salmo iridius, has been investigated. The insulin compound has shown the hitherto lowest solubility in serum. Therefore we now use this protamine in the clinical experiments.

CLINICAL INVESTIGATIONS

During more than two years about eighty-five patients have been treated with protamine insulinate in the Steno Memorial Hospital. They have represented all age classes and cases of every degree of gravity, yet most of the cases were severe and several of them presented different complications. In addition to careful examination during their stay in the hospital, the condition of the patients has also been followed after they were dismissed.

During their stay in the hospital, generally for about four weeks, the blood sugar was examined as a matter of routine, five times every day: fasting at 7 a. m., at 11 a. m., at 2 p. m., at 5 p. m. and at 10 p. m., the insulin injections generally being given at 8 a. m. and at 6 p. m. By means of numerous controls it has been proved that these five determinations make it possible to form a good picture of the oscillations of the blood sugar during the day. Yet they often have been supplemented with twenty-four hour curves on the basis of blood sugar determinations every two hours. All determinations were made on

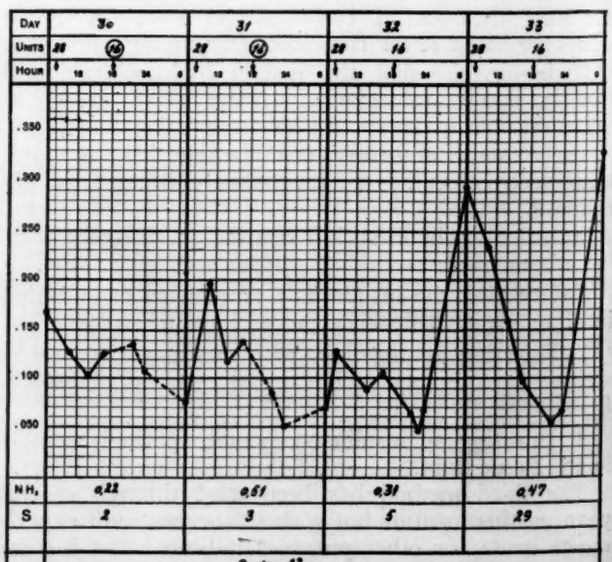

Chart 3.—Transition from a period in which the patient was treated with protamine insulinate to a control period in which the patient was treated with ordinary insulin. Protamine insulinate was given on the first two days shown in the diagram.

capillary blood by titration according to the ferricyanide method (Hagedorn-Jensen).

In addition, the daily sugar excretion was regularly determined. As an indicator of fluctuations in the acidosis, the ammonia excretion in the urine was also followed every day.

All together, more than 15,000 blood sugar determinations and 3,000 determinations of sugar and ammonia in the urine form the basis of the present communication.

The patients treated have been on a diet with an average of about 2,300 total calories, individually modified according to the calculated standard metabolism (Du Bois) of every patient. The diet contains about 100 Gm. of carbohydrate and 70 Gm. of protein. Of the carbohydrates about 40 per cent are given at breakfast (8 a. m.), about 40 per cent at lunch (11:30 a. m.) and about 20 per cent at dinner (5:30 p. m.).

The test of the effect of the protamine insulinate has been made by comparing periods in which the patients were treated with ordinary insulin, with periods in which, under exactly the same conditions otherwise, they were treated with protamine insulinate.

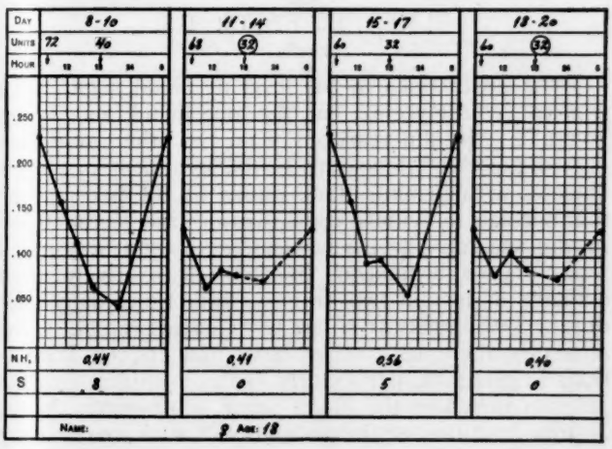

Chart 4.—Four periods in succession. The values represent the average from each period. Protamine insulinate was given in the second and fourth periods.

By alternation, control periods were obtained from the patients themselves.

These investigations have shown that the sharp peak effect, usually seen three or four hours after the injection of ordinary insulin, is largely avoided by the use of protamine insulinate. Furthermore, the effect of protamine insulinate is more prolonged—roughly about twice as long as that of ordinary insulin. Without increasing the number of injections, we can by this means diminish the blood sugar fluctuations, reduce or suppress the glycosuria and reduce the ammonia excretion, and at the same time reduce the risk of the occurrence of hypoglycemia.

We have never observed any ill effects. The injection is painless, there is no local reaction, and protein reactions do not occur. We have never observed any failure of the insulin effect. The effect seems to be the same whether the patients stay in bed or are out of bed. It has been as effective in children as in grown-up persons. The administration as a suspension has never given rise to difficulties or inconvenience. In acute conditions (coma) ordinary insulin is of course to be used, as it works faster.

When the treatment with ordinary insulin gives satisfactory results, the use of protamine insulinate is of no special value.

We have been able to relieve all patients completely of feelings of uneasiness due to acidosis or high blood sugar without giving more than two injections daily. The hypoglycemic insulin reactions have been fewer, and when there has been hypoglycemia the symptoms

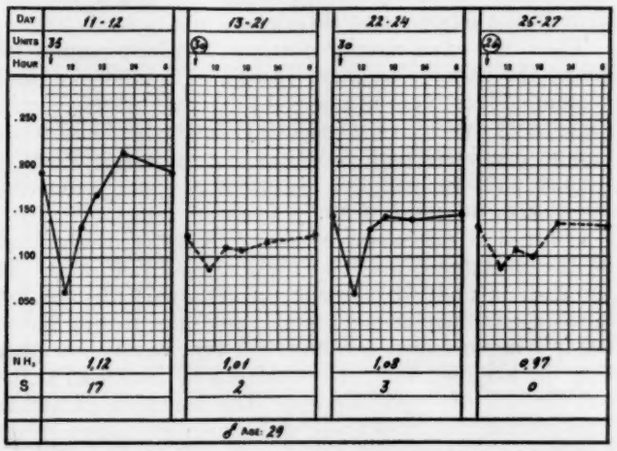

Chart 5.—A mild case, treated with only one injection every twenty-four hours. Four periods in succession. The values represent the average from each period. Protamine insulinate was given in the second and fourth periods.

always have appeared gradually, so that the patient has been well aware of the situation and has been able to provide against it. The treatment by protamine insulinate has proved very adequate and effective with regard to complications. Especially we have noted good results in cases complicated by neuritis and enlargement of the liver in young patients.[4]

In the discharged patients, especially the children, it was found to be easier to maintain the regulation by treatment with protamine insulinate.

In accordance with the more steady course of the blood sugar at night and its more irregular course

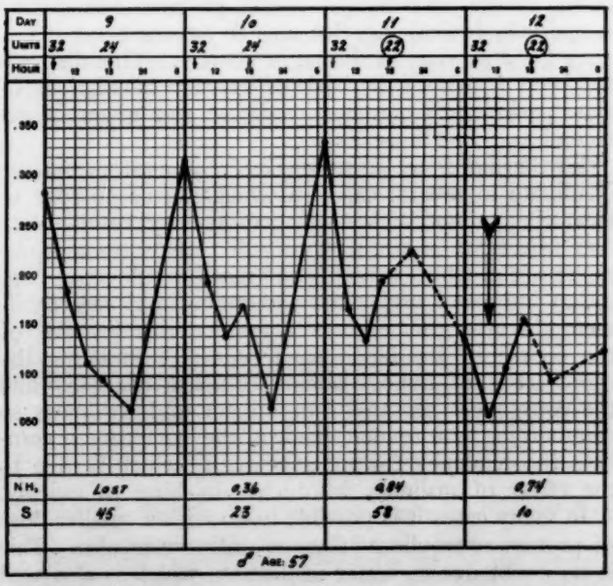

Chart 6.—Showing how an insulin reaction may occur (the fourth day shown in the diagram at 11 a. m.) if the morning dose is not reduced, when protamine insulinate was given the night before.

during the day, the smoother and more protracted effect of protamine insulinate has proved especially useful at night, and we have observed further that, when ordinary insulin is given in the morning after

4. Hanssen, P.: Enlargement of the Liver in Diabetes Mellitus, to be published.

protamine insulinate in the evening, the ordinary insulin will in most cases be much less violent in its effect, because it is given at a moment when the organism is in fairly good balance and the blood sugar fairly low. With ordinary insulin in the morning under these circumstances we can generally avoid the larger fluctuations in the blood sugar throughout the day.

Thus, we have usually obtained the best results by giving the patients ordinary insulin in the morning and protamine insulinate in the evening. Still, there remain some cases in which the result will be the best with protamine insulinate both morning and evening. Then it usually pays to give the injections at equal intervals, say at 8 a. m. and 8 p. m.

Chart 2 is an example among many of the effects of the protamine insulinate when used that way. It shows how under treatment with ordinary insulin the blood sugar fluctuations remain wide, the fasting blood sugar lying between 300 and 400 mg., despite the fact that the evening injection could not be increased without the risk of hypoglycemia. The ammonia excretion was considerable and there was much glycosuria. On turning to protamine insulinate treatment the situation changed entirely: the blood sugar fluctuations were smoothed out, the fasting blood sugar became normal, the ammonia excretion fell, and the urine became free from sugar, while at the same time the subjective condition of the patient improved considerably. The effect is not always so immediate as in this case. Sometimes it will last a few days (maximum observed five) until the full effect stands out.

Chart 3 shows in exactly the same manner transition from protamine insulinate treatment to treatment with ordinary insulin in a control period. In spite of the doses being exactly the same, the blood sugar fluctuations and glycosuria at once became large when ordinary insulin was given in the evening.

The cases illustrated in charts 2 and 3 were both rather severe, in which of course protamine insulinate is specially indicated. But also in lighter cases it has done good service, as shown in chart 4. This diagram has been drawn on the basis of average calculations of four periods. Protamine insulinate was given in the second and fourth periods.

Furthermore, we have successfully used protamine insulinate in several cases in which it was possible to treat the patient with fairly satisfactory results with one injection of ordinary insulin every twenty-four hours but in which it was found that the subjective condition improved under the protamine insulinate treatment, because this ensures a considerable leveling of the course of the blood sugar curve, eliminating the rapid onset of hypoglycemia (compare chart 5) and the consequent sensations of hunger and weakness so common in the forenoon, while at the same time it combats the tendency toward glycosuria, which is due to the effect of ordinary insulin diminishing so quickly.

In many cases it is possible to do with a smaller dose of protamine insulinate than of ordinary insulin. This is no doubt due to better utilization, which is also well known when one large dose of ordinary insulin is replaced by a number of small doses. In spite of this, it has proved beneficial in certain instances, especially in cases in which only one injection every twenty-four hours is given, to give a rather larger dose of protamine insulinate. In these cases the better utilization of the preparation is balanced by the possibility obtained of satisfying the insulin requirement more completely without risking hypoglycemia.

A single point concerning the dosage is noteworthy. In some cases so great a change will be produced by giving protamine insulinate in the evening that the fasting blood sugar, instead of being for instance 300 to 400 mg., will suddenly drop down to normal or even lower values, in which cases it will often be necessary to reduce the morning dose of ordinary insulin by 10 or 20 per cent.

In the case shown in chart 6 we have purposely omitted this and kept the morning dose unchanged, with the result that a slight insulin reaction occurred, where the arrow is shown on the diagram. In any case this is a matter that requires attention.

A full report of the details of the clinical investigations will be published shortly.

CLINICAL EXPERIENCE WITH PROTAMINE INSULINATE

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ALEXANDER MARBLE, M.D.
AND
ELMER H. STOTZ, B.S.
BOSTON

Wide fluctuations in the level of blood sugar, with marked hyperglycemia on the one hand and hypoglycemia ("insulin reactions") on the other, represent one of the chief difficulties in the treatment of severe diabetes with insulin. One thinks of the pancreas of the normal individual as adjusting its secretion of insulin according to the need of the body at any given time. The subcutaneous injection of relatively large amounts of insulin two, three or four times daily thus differs considerably from the physiologic process. Consequently there may occur large and sudden fluctuations in glycemia, particularly in those insulin-sensitive patients in whom the blood sugar is unusually labile. Insulin reactions, or the possibility of such, particularly during the night, are often a source of much worry both to the patient and to his family.

Accordingly, it was with much interest that we learned a few months ago that Dr. H. C. Hagedorn and his associates, working at the Steno Memorial Hospital [1] in Copenhagen, had succeeded in developing a preparation of insulin the use of which enabled one to avoid to a great extent marked fluctuations in blood sugar. During the course of the past summer two of our group (H. F. R. and P. W.) visited Dr. Hagedorn's laboratory and clinic. He showed them the results he had obtained and generously gave us sufficient material for clinical trial with our own patients.

THE NATURE OF PROTAMINE INSULINATE AND METHOD OF ADMINISTRATION

The theoretical considerations and the studies that led up to the preparation of protamine insulinate have been outlined by Hagedorn in his preliminary report [2] and in the accompanying article.[3] By combining the

The expenses of these studies were defrayed in part by a grant from the Chemical Foundation.

From the George F. Baker Clinic, Elliott P. Joslin, M.D., medical director, at the New England Deaconess Hospital.

1. The Steno Memorial Hospital is a twenty-two bed research institution adjoining the Nordisk Insulin Laboratorium, in which is produced Danish Leo insulin. Both the hospital and the insulin laboratory are administered by a board composed of outstanding Scandinavian scientists with Dr. Hagedorn as the director. The Nordisk Insulin Laboratorium was chartered by the king of Denmark as a charitable institution, and the profits from the manufacture of insulin are used to further investigation.
2. Hagedorn, H. C.: Paper presented at the meeting of the Nordisk Congress for Internal Medicine at Copenhagen, June 29, 1935.
3. Hagedorn, H. C.; Jensen, B. N.; Krarup, N. B., and Wodstrup, I.: Protamine Insulinate, this issue, p. 177.

usual insulin hydrochloride (in solution, p_H = about 2.5) with a protamine derived from the sperm of a species of trout, Salmo iridius, a compound is formed which has its point of minimum solubility at p_H 7.3, or at about the reaction of blood serum. After the subcutaneous injection of a turbid suspension of protamine insulinate, the compound is slowly broken down and the active insulin released over a relatively long space of time, thus allowing for an evener and more prolonged effect on the blood sugar.

We have obtained from Dr. Hagedorn vials containing 5 cc. of Danish Leo Insulin of U-40 strength.[4] Before using, one adds, in sterile fashion, to a given vial 1 cc. of a solution containing the protamine and sodium phosphate (for buffer effect). The vial is shaken before each withdrawal of insulin. The syringe used for the actual injection is of the usual type. To prevent coagulation of the protein material the syringe must be cool when used.

We have observed no noteworthy local or general reactions following the use of protamine insulinate, although some patients have stated that slightly more discomfort attends the injection than when ordinary insulin is used.

TYPE OF ACTION

Hagedorn states that the blood sugar lowering effect of the protamine insulinate lasts roughly twice as long

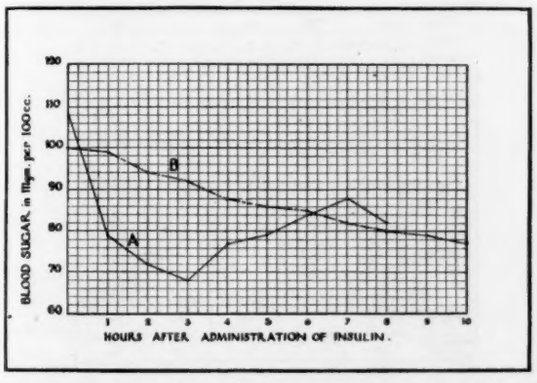

Fig. 1.—Miss M. G., 25 years of age, normal, nurse-dietitian. Curve A, October 23, shows the effect of 8 units of regular insulin (Lilly) given subcutaneously. Curve B, October 25, shows the effect of 10 units[4] of protamine insulinate. Note the gradual, steady fall in blood sugar in the latter curve. In each case the insulin was given immediately after the first blood sample was taken.

as that of regular insulin. This is borne out by our experience. With our own patients in the hospital, where because of institutional routine the evening dose of insulin is usually given shortly after 5 o'clock, the effect of this dose of protamine insulinate is regularly demonstrable by a blood sugar determination taken at 7 a. m. on the following day, fourteen hours later.

The type of action secured is well illustrated by the blood sugar curves obtained with a healthy normal young woman in whom the effects of regular insulin and of the protamine insulinate were compared. The insulin in each instance was given after an overnight fast, and no food was taken during the course of the tests.

THERAPEUTIC STUDIES WITH PATIENTS

So far we have used the protamine insulinate in fifteen patients who, with one exception, have severe diabetes. All are patients who have been troubled to a greater or less degree with severe insulin reactions. The ages of the patients range from 4 to 59 years, although eight of them are under 20. Eight are males and seven females. Our procedure has been patterned after that outlined by Dr. Hagedorn. Patients have spent from one to three weeks in the hospital,

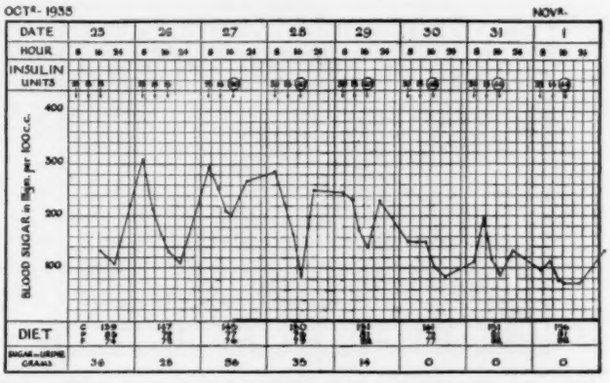

Fig. 2.—A girl, aged 18.7 years, had had diabetes for 2.3 years. The control curve obtained on October 25 and 26 shows the wide fluctuations seen when regular insulin was employed. Note the high fasting blood sugars and the tendency to low values at 10 p. m. After use of protamine insulinate for three days, stabilization with minor fluctuations in blood sugar was secured. Note the decrease in glycosuria. In this and subsequent charts, all doses of protamine insulinate are enclosed in circles. The period of administration of protamine insulinate is indicated by a heavy line at the bottom of the blood sugar chart.

during which time they have received a weighed diet. Daily qualitative tests for urine sugar have been made during the day at intervals of two or three hours from 6:30 a. m. to 9:30 p. m. Qualitative tests for sugar and diacetic acid or acetone have been made daily on a portion of the mixed twenty-four hour collection; when sugar has been found, the percentage has been determined by a modification of Benedict's procedure.[5] Determinations of the blood sugar (capillary) have been made at 7 and 11 a. m. and at 2, 5 and 10 p. m. daily, Folin's method being used.[6] Nine of the patients have been allowed to continue the use of the protamine insulinate at home following hospital stabilization.

In all cases in which the protamine insulinate has been used there has been unmistakable evidence as to

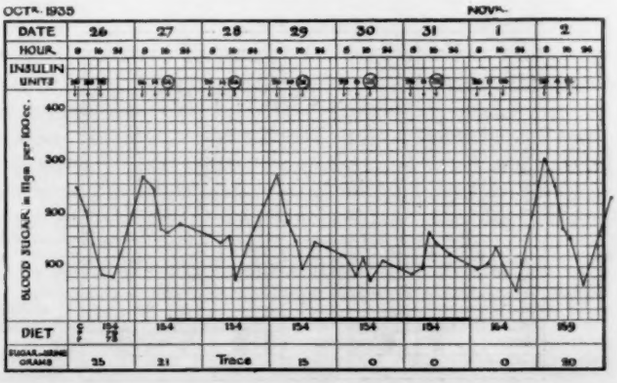

Fig. 3.—A woman, aged 26.9 years, had had diabetes for 16.1 years. A period of use of protamine insulinate was preceded and followed by control periods during which regular insulin was employed.

its more prolonged effect. With the new preparation, a normal fasting blood sugar is readily obtained. In general, our results have confirmed those reported by the Danish investigators. Charts 2 and 3 are cases in

4. It will be noted that in the preparation of the protamine insulinate 1 cc. of the protamine-buffer solution is added to 5 cc. of insulin. Hence U-40 insulin is reduced in strength to U-33⅓. To avoid confusion, however, we have used the resulting protamine insulinate as if it were still of U-40 strength. Accordingly, all doses of protamine insulinate stated in this paper must be multipled by ⅚. Prof. C. H. Best has kindly informed us that the unit of insulin as now used in Denmark differs slightly from that in America. On this basis, all doses of protamine insulin mentioned in this paper would be further multiplied by 22/25.

5. Smith, M.: A Micro Modification of the Method of Benedict for the Quantitative Determination of Reducing Sugar in Urine, J. Lab. & Clin. Med. **7**: 364 (March) 1922.

6. Folin, Otto, and Malmros, H.: An Improved Form of Folin's Micro Method for Blood Sugar Determinations, J. Biol. Chem. **83**: 115 (July) 1929.

point. In both cases two or three days of adjustment of dosage of the protamine insulinate was required before the desired effect was secured. The results were striking, however, on both the blood and urinary sugar. In the accompanying charts it will be noted that both patients received a noon dose of

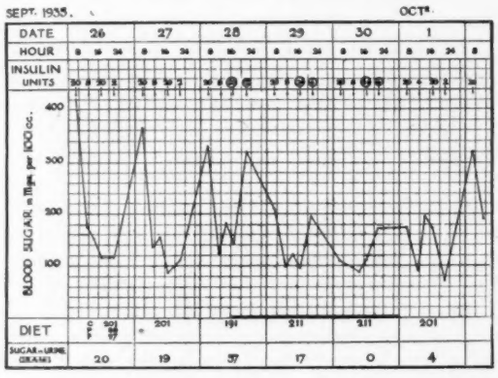

Fig. 4.—A boy, aged 16.4 years, had had diabetes for 8.4 years. Note the striking difference both in blood sugar and urinary sugar during the three days when the protamine insulinate was used. On the final day regular insulin was substituted and again a low blood sugar at 10 p. m. and a high blood sugar at 7 a. m. on the following day resulted.

(regular) insulin. Possibly because of the relative shortness to date of the period of observation and of use of the protamine insulinate, we have been unable to dispense with the noon dose for those patients whose diabetes is severe enough to require under ordinary circumstances three or four doses of insulin. Our experience suggests that time and continued use may allow better stabilization on a smaller number of units and on two doses of insulin a day, as has been Hagedorn's experience.

EFFECT OF DIET

The diets in use in Hagedorn's clinic contain on the average about 100 Gm. of carbohydrate. The diets used in our patients included from 130 to 241 Gm. of carbohydrate. We have been interested, therefore, to find that the protamine insulinate is effective despite the more liberal intake of carbohydrate. This is illustrated in chart 4.

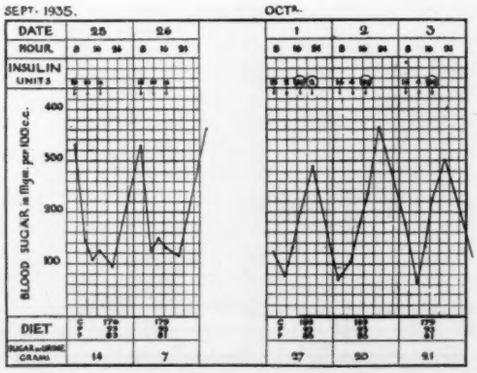

Fig. 5.—A boy, aged 14.3 years, had had diabetes for 10.9 years. This chart illustrates one of the difficulties encountered with some patients in the use of the protamine insulinate. On the left is a control curve showing the high fasting values when regular insulin was used. On the right is the curve for three days during which protamine insulinate was given. Note that although normal or subnormal fasting values were obtained, those at 10 p. m. were high and glycosuria was slightly more pronounced.

Another difference exists between the diets in current use in America and in Denmark. In Hagedorn's clinic the division of carbohydrate between the three meals is ⅖, ⅖, ⅕ as contrasted with our practice of apportionment, ⅕, ⅖, ⅖. Obviously a smaller task is imposed on the before-supper dose of protamine insulinate when the smallest meal of the day is given at this time. We too have had our best results when our diets were rearranged to provide the smaller supper. Otherwise, because of the lack of immediate and powerful action on the part of the protein insulinate, in the evening and earlier part of the night the blood sugar may be higher than one wishes and considerable glycosuria may result. This effect is well shown in chart 5.

Here it is evident that with the protamine insulinate the end result was a reversal of the usual blood sugar curve of the patient with severe diabetes receiving insulin. That is, instead of extreme hyperglycemia at 7 a. m., normal or subnormal values were obtained. Instead of a tendency to low values at 10 p. m., high values were the rule, apparently because of the inability of the more slowly acting protamine insulinate to cope completely with the amount of carbohydrate given at the evening meal. Dr. Hagedorn suggests as an added factor the possibility that in some patients the insulinate may be absorbed with unusual slowness. Giving the evening dose as early as 3 or 4 p. m. may in such cases be advantageous.

This effect may by no means be a disadvantage, however. The average juvenile diabetic patient or his

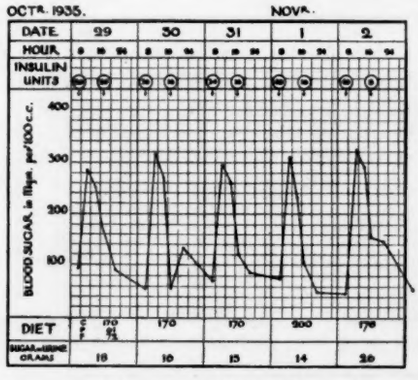

Fig. 6.—A boy, aged 4.8 years, had had diabetes for 2.1 years. This curve shows an unsuccessful attempt to use the protamine insulinate exclusively. Note that when the dosage was increased in an attempt to control daytime hyperglycemia and glycosuria, the delayed effect of the insulin given was sufficient to cause marked hypoglycemia several hours later. This patient later did well with protamine insulinate substituted for only one (evening) dose of insulin.

family will retire at night in a much more comfortable state of mind if the bedtime test shows that the urine contains a small amount of sugar, particularly if it is known that almost surely the rising specimen on the following morning will be sugar free.

TIMES OF INJECTION

Hagedorn and his associates have ordinarily given a dose of regular insulin in the morning and a dose of protamine insulinate in the evening. They state that usually one does not secure as satisfactory results if both doses are of the new preparation. The difficulty arises again because of the inability of the protamine insulinate to exert a quick, powerful effect; hence there is apt to be hyperglycemia and glycosuria during the forenoon.

Our limited experience confirms this. In two cases we have attempted rather unsuccessfully to use the protamine insulinate entirely. The effect secured in one of the cases is shown in chart 6.

As is evident from this chart, although we were able to produce fasting blood sugar values at or below a normal figure, marked rises occurred during the middle

of the day. When the before-breakfast dose was increased in an attempt to overcome this, a delayed effect was obtained so that hours later, at 1 and 3 a. m., severe hypoglycemic reactions with convulsions occurred. This experience emphasized the fact that, with protamine insulinate, reactions can be produced if sufficient dosage is employed.

It seems entirely possible that future work may so improve the type of preparation that one will be able

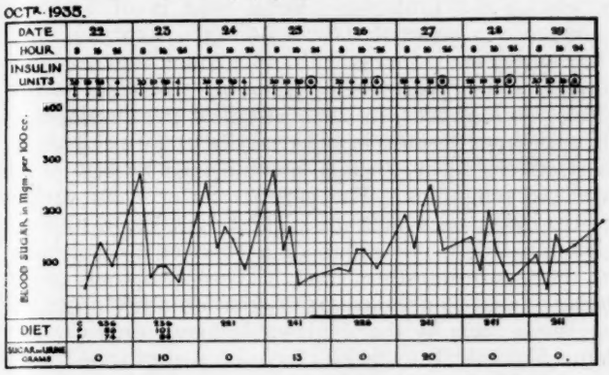

Fig. 7.—A girl, aged 15.2 years, had had diabetes for 8.8 years. Note the satisfactory effect when protamine insulinate was used only at bedtime (10 p. m.). The hyperglycemia and glycosuria on October 27 was obviously due to an unwise reduction in insulin dosage before the noon meal from 10 to 6 units.

to use the protamine insulinate or related compound exclusively. In this case one might find then that the doses could best be given by the clock, irrespective of times of meals, every eight or twelve hours.

We have studied to some extent the effect of giving the injection of protamine insulinate from sixty to ninety minutes before meals. The longer interval between insulin and food probably is desirable, allowing more time for the blood sugar lowering action to become effective.

In two patients we have tried the effect of giving regular insulin before breakfast and supper (and before the noon meal if this is needed) and the protamine insulinate merely for the bedtime (10 p. m.) dose. Satisfactory results can be secured, as chart 7 shows, but there is the inconvenience of an added dose.

COMMENT

Protamine insulinate is still in the experimental stage. Time will decide its place or that of some related preparation in the treatment of diabetes. In its present stage of development there are certain obvious disadvantages. Some of these can and will, no doubt, be overcome by future work.

1. *Inconvenience.*—Since as now used the compound is not indefinitely stable (Hagedorn), the protamine must be added to a given vial of insulin only as it is needed for use within the ensuing days or few weeks. The addition must be made with a sterile, cool syringe. The vial must be shaken each time before insulin is withdrawn. At the present time two types of insulin seem desirable: regular insulin for the morning, and the new preparation for the evening. This is inconvenient.

2. Because its action is slow and gradual, the protamine insulinate alone might be unsatisfactory in diabetic emergencies, as during infections or acidosis.

3. As already stated, with some patients it may be difficult to control the blood sugar in the few hours following the evening meal unless the carbohydrate allowed at this meal is materially reduced. This again is due to the lack of immediate, sharp action on the part of the protamine insulinate. In this and similar situations it would be advantageous to have an insulin preparation—perhaps a slightly less insoluble protamine insulinate than the one now used—the action of which combines the desirable effects of both the "old" and the "new" insulin. Dr. Hagedorn writes that active work along this line is being continued in his laboratory.

SUMMARY

Preliminary observations in fifteen cases have in general confirmed the observations of Hagedorn and his associates regarding the protamine insulinate that has been developed in their laboratories. Presumably by slow breakdown of the compound in the subcutaneous tissues, a blood sugar lowering action is secured which is evener and more prolonged than that which follows regular insulin. Because of this, wide fluctuations in blood sugar level are less apt to occur and hypoglycemic reactions can be largely avoided.

It must be emphasized that the new preparation is still in the experimental stage. Further work both in insulin laboratories and in diabetic clinics will be necessary to determine when, how, and in which patients protamine insulinate or some related compound can be best used. With the prospect bright of maintaining the level of the blood sugar within normal limits throughout the twenty-four hours, it would appear as if a new revolution in the treatment of diabetes must follow and the possibility created for the diabetic patient to resemble more closely a normal individual.

81 Bay State Road.

RÔLE OF ANOMALIES OF KIDNEY AND URETER IN CAUSATION OF SURGICAL CONDITIONS

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NEW YORK

Anomalies in the upper urinary tract are more commonly observed than in any other system of the body.[1] In olden times anomalies were rarely discovered even post mortem, owing to the difficulty of obtaining material for anatomic dissection and to the lack of proper methods of investigation and diagnosis, as a result of which these malformations were long considered as anatomic curiosities.[2] Since Albarran's systematization of the use of cystoscopy and catheterization of the ureters,[3] and the discovery of pyelography,[4] and more recently the introduction of intravenous urography,[5] it has been possible to diagnose innumerable malformations and pathologic condi-

Read before the Section on Urology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Gutierrez, Robert: Anomalies of Kidney, Hydronephrosis, Movable Kidney, Injuries of the Kidney, in Cabot, Hugh: Modern Urology, ed. 3, Philadelphia, Lea & Febiger, vol. 2, chapter 11, to be published.

2. Rayer: Traité des maladies des reins, Paris, Baillière, 1841; Atlas, 1837. Cadoré, F. L.: Les anomalies congénitales du rein chez l'homme, Thèse de Lillie, 1903, No. 144. Gérard, Ernest: Les anomalies congénitales du rein, J. de l'anat. et physiol. **41**: 241-411, 1905.

3. Albarran, Joaquin: Médecine operatoire des voies urinaires, Paris, Masson et Cie, 1909; Maladies chirurgicales du rein et de l'uretère, in Le Dentu and Delbet: Traité de chirurgie, Paris, Baillière **8**: 598-970, 1899.

4. Voelcker, Fritz, and von Lichtenberg, A.: Pyelographie (Roentgenographie des Nierenbeckens nach Kollargolfüllung), München. med. Wchnschr. **53**: 105-107, 1906. Braasch, W. F.: Urography, Philadelphia, W. B. Saunders Company, 1927.

5. von Lichtenberg, A., and Swick, Moses: Darstellung der Niere und Harnivege im Roentgenbild durch intravenose Einbringung eines neuen Kontraststoffes, des Uroselectans, Klin. Wchnschr. **8**: 2087-2091 (Nov. 5) 1929. von Lichtenberg, A., and Ravasini, and Ward, R. O.: Report on Pyelography by the Descending Route, Tr. Fifth International Congress of Urology, London **1**: 274-310, 1933. Swick, Moses: Intravenous Urography by Means of Uroselectan, Am. J. Surg. **8**: 405-414 (Feb.) 1930. von Lichtenberg, A.: Principles and New Advances in Excretion Urography, Brit. J. Urol. **3**: 119-165 (June) 1931.

tions of the kidney that were never before suspected. So amazing is the rôle of the vast number of anomalies of the urinary tract in the etiology of diseases and surgical conditions, as recognized in this urographic era, that it can safely be said that fully 40 per cent of all pathologic conditions of the kidneys and ureters

TABLE 1.—*Anomalies of the Kidney Proper*

1. Anomalies of Number
   - (*a*) Absence of both kidneys
   - (*b*) Absence of one kidney (solitary kidney)
   - (*c*) Double or multiple kidney (supernumerary kidney) — Unilateral / Bilateral
2. Anomalies of Size
   - (*a*) Hypoplastic kidney — True renal hypoplasia / Renal aplasia
   - (*b*) Hypertrophic kidney — Lobulated / Compensated
3. Anomalies of Form
   - (*a*) Long kidney
   - (*b*) Short kidney
   - (*c*) Broad kidney
   - (*d*) Lobulated kidney
   - (*e*) Cystic kidney — Unilateral / Bilateral
   - (*f*) Polycystic kidney — Unilateral / Bilateral
   - (*g*) Fused kidney
     - Asymmetrical: L-shaped kidney; Sigmoid kidney; Ring-shaped kidney ("en gallette"); Kidney en masse
     - Symmetrical (horseshoe kidney): With concavity above; With concavity below; With fibrous isthmus; With isthmus of true renal parenchyma; With one, two, three or four pelves and ureters
4. Anomalies of Position
   - (*a*) Movable or floating kidney
   - (*b*) Ectopic kidney: Simple unilateral; Simple bilateral; Bilateral with fusion (horseshoe kidney); Crossed with or without fusion
   - Any of these anomalies of position may be: Lumbar / Iliac / Pelvic / Median
5. Anomalies of Rotation
   - (*a*) Deficient rotation — Unilateral / Bilateral
   - (*b*) Excessive rotation — Unilateral / Bilateral

are due to congenital anomalies, and that these malformations constitute the most extensive chapter in modern urology.[1]

While it is true that not every such anomaly constitutes a pathologic lesion with clinical symptoms, it has nevertheless been demonstrated by modern urology that any congenital abnormality is potentially a clinicopathologic entity and liable to become a surgical condition. Such anomalies predispose to poor function and to urinary stasis with resultant retention and possible infection. In many cases of chronic pyuria and recurrent attacks of pyelitis or nephritis in children, the underlying cause has been found to be a congenital malformation of the urinary tract. Deficient function, nephritis and pyelonephritis, as well as hydronephrosis and calculus, are of common occurrence in kidneys that are congenitally abnormal; and in cases in which only one kidney shows an abnormality, the opposite kidney, though normally developed, may suffer from the additional functional strain imposed on it. Fused kidneys of various types, and especially horseshoe kidney, are usually associated with some degree of ectopia, and with abnormalities in the pelvis and the form or number of the ureters. They are, therefore, frequently the site of pathologic lesions. Abnormalities of the pelvis and ureter favor obstruction with the development of hydronephrosis, often with superimposed infection, forming pyonephrosis. In fact, one of the most frequent causes of hydronephrosis is an anomaly of the ureter or its orifices, or displacement or angulation of the ureter caused by aberrant renal blood vessels.[6] When the malformation is in the lower portion of the ureter, it results in hydro-ureter as well as hydronephrosis, and, when there is infection, in pyohydro-ureteronephrosis.

These various pathologic lesions in abnormal kidneys may cause a wide variety of urologic symptoms that direct attention to the urinary tract and bring the patient to the urologist. Renal pain is of frequent occurrence in some of these conditions, occurring more frequently in kidneys with congenital abnormalities than in similar pathologic lesions in otherwise normal kidneys. However, in some instances the development of pathologic lesions in congenitally abnormal kidneys is relatively silent; that is, accompanied by few or no urologic symptoms. The patients suffer from various gastro-intestinal symptoms suggesting a lesion of some abdominal or pelvic organ or a functional disturbance of the gastro-intestinal tract. These symptoms are to be attributed to pressure or traction on other organs or nerve plexuses by the abnormal kidney. Often one or more abdominal operations have been performed without relief before the patient is referred to the urologist. It is of paramount importance, in order to avoid errors in diagnosis, that careful cystoscopic and urographic study should be made in every case in which the slightest urinary symptoms become manifest, because it is obvious that many silent surgical conditions of the upper urinary tract confuse the preoperative diagnosis

TABLE 2.—*Anomalies of the Excretory Apparatus of the Kidney (Calices, Pelvis and Ureter)*

1. Calices: Absent; Aberrant; Abnormal in number, size or position
2. Renal pelvis: Absent; Rudimentary; Double (bifid) or multiple — Unilateral / Bilateral; Hydronephrosis (congenital) — Intrarenal pelvis / Extrarenal pelvis — Unilateral / Bilateral; Diverticulum of renal pelvis
3. Ureter
   - Anomalies of number: Single (one ureter absent); Double on one side; Triple; Quadruple; Quintuple; Sextuple — Complete / Incomplete
   - Anomalies of form, size and position:
     - Diverticulum of ureter — Simple / Multiple
     - Imperforate ureter
     - Stricture of the ureter — Pyo-ureter; Hydro-ureter; Megalo-ureter
     - Dilatation of ureter — Total / Partial
     - "Golf hole" type of ureteral orifice
     - Ureter ectopic: misplaced in bladder — At fundus; In diverticulum; Near bladder neck, etc.
     - Ureter ectopic: with extravesical orifice opening into — other ureter; urethra; genital tract; bowel
     - Ureter twisted or occluded
     - Ureters crossed
     - Ureter with valve formation
     - Ureterocele

and such a urologic study will often show the presence of a congenital abnormality of the kidney or ureter as the underlying cause of the entire syndrome.

In a recent communication before this section at the New Orleans session, I[7] reported several cases of

6. Mathé, C. P.: The Rôle of Aberrant Vessels in the Production of Hydronephrosis, J. Urol. **19**: 211 (March) 1928. Hinman, Frank: Obstructive Hydro-Ureteral Angularity with Hydronephrosis in Children, Arch. Surg. **18**: 21-58 (Jan.) 1929.

7. Gutierrez, Robert: Surgical Aspects of Renal Agenesis, with Special Reference to Hypoplastic Kidney, Renal Aplasia and Congenital Absence of One Kidney, Arch. Surg. **27**: 686-735 (Oct.) 1933.

congenital absence of one kidney, as well as hypoplastic and aplastic kidney, and more recently in a monograph I [8] have discussed the clinical management of horseshoe kidney at length. At this time, in order to save time, I will only report three unusual cases of anomalies of the upper urinary tract, which will serve to bring out the importance of the rôle of such anomalies in the causation of surgical conditions.

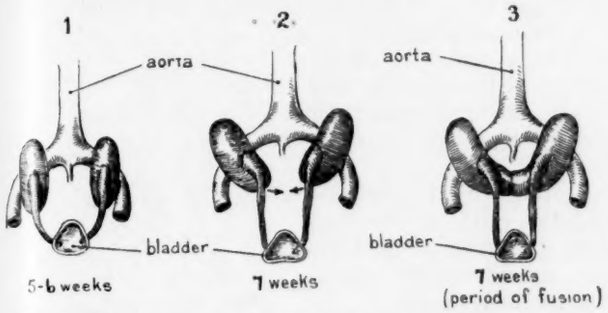

Fig. 1.—Diagrammatic drawing showing the different stages of ascent, rotation and migration of the kidneys during embryonic life, and revealing the theoretical occurrence of fusion to form the horseshoe kidney. (From Gutierrez, Robert: The Clinical Management of Horseshoe Kidney, New York, Paul B. Hoeber, Inc., 1934.)

The literature on anomalies of the kidneys and ureters is so extensive, and the types of anomalies so innumerable, that it would be impossible to discuss all of them in detail, and therefore for practical use I have worked out an anatomic and clinicopathologic classification to outline briefly the various types of congenital abnormalities of the kidney, its excretory apparatus (calices, pelvis and ureter) and its blood and lymphatic supply. This classification is given in the accompanying tables.

EMBRYOLOGY

The term "congenital anomalies" implies that the origin of such anomalies is to be sought in embryonic life. A study of the development of the urogenital system shows its great complexity and indicates the reasons for the wide diversity of types of congenital malformations in the upper urinary tract. In the embryologic evolution of this tract, three essential renal organs are formed in rapid succession, the pronephros, the mesonephros and the metanephros; only the latter persists to become the kidney. In the course of the kidney's development it undergoes a migration upward, when the ureter, increasing in length, forces the renal anlage to change its position, the caudal extremity rising more slowly. Not only does the kidney migrate; it also undergoes a rotation around its longitudinal axis. Because of the intimate relation of the kidney to the umbilical arteries and the bifurcation of the aorta, it is evident that there may be some mechanical obstruction by these arteries to interfere with the kidney's migration and rotation (fig. 1). Such interference would result in various types of fused and ectopic kidneys, fusion being due to the union of two kidney blastemas in early fetal life. The fused organ may assume a number of different shapes and may be symmetrical or asymmetrical with reference to the midline of the body. Most important of these types of fused kidney is the horseshoe kidney,[8] in which the two renal organs have become fused into a single mass lying directly across the median axis of the body, joined together by an isthmus. Such fused kidneys are usually also ectopic.

If for any reason the elements of the wolffian duct are arrested in their development of the primitive nucleus on one side, half of the urinary apparatus will be absent from the earliest period of fetal life. The same general embryonal influences that interrupt the orderly development of the kidneys may also be responsible for the various anomalies of the pelves and the ureters. There may be a surplus, a deficit or an ectopia of the excretory passages, depending on the precise nature of the developmental abnormality in the ureteral bud in very early fetal life.[1]

SYMPTOMATOLOGY

When any congenital anomalies of the urinary tract are present, the individual may reach adult age without having any clinical symptoms indicating their existence; but this is rather unusual. Sometimes it is the effect of a general constitutional disease that causes symptoms to develop by putting additional strain on the working capacity of the kidneys. It is therefore the rule rather than the exception for patients with urinary tract anomalies to develop symptoms that sooner or later bring them to the urologist. But before they reach the urologist, a considerable proportion—probably 30 to 40 per cent—have undergone unnecessary operations because the symptoms suggested disease of some abdominal or pelvic organ. In some types of renal abnormalities, abdominal pain of an indefinite nature is an important factor in the clinical syndrome. In some cases it is associated with definite urinary symptoms which suggest—or should suggest—a lesion of the urinary tract. In others the abdominal symptoms overshadow the urinary symptoms so that they escape notice unless a careful study of the patient is made. In some cases of hypoplastic or aplastic kidney there may be an entire absence of urinary symptoms and a history of bilateral abdominal pain, or there may be lumbar pain and symptoms of chronic nephritis.[7] Even in cases of hydronephrosis, symptoms of gastro-intestinal disturbance may predominate [9] or tumor formation may be the only symptom. In other cases there may be only slight frequency or dysuria, while in still others there

TABLE 3.—*Anomalies of the Blood and Lymphatic Supply of the Kidney*

1. Arteries
   - Anomalies of number: 1 to 6 per kidney
   - Anomalies of origin, from: aorta; spermatic artery; common iliac artery; external iliac artery; internal iliac artery; sacral artery
   - Anomalies of course with reference to vena cava: anterior; posterior
   - Anomalies of course with reference to iliac artery: anterior; posterior
   - Anomalies of penetration at: hilus; superior pole (from renal artery; from aorta); inferior pole (from renal artery; from aorta; from common or external iliac artery); front or back of kidney; margins of kidney
2. Veins
   - Abnormal position of inferior vena cava, on left side
   - Retro-aortic anastomosis of veins
   - Presence of a vein at superior pole
   - Presence of a vein at inferior pole opening into: renal vein; vena cava; iliac vein
   - Renal vein entirely retropyelic
   - Anomalous connection with other systems
3. Lymphatics
   - Following anomalous blood vessels
   - Abnormally connecting with Pecquet's cistern

8. Gutierrez, Robert: The Clinical Management of Horseshoe Kidney, New York, Paul B. Hoeber, Inc., 1934.

9. Heitz-Boyer, M.: Le syndrome enterorénal; néphrites et pyelonéphrites d'origine intestinale, Bull. et mém. Soc. méd. d. hôp. de Paris, July 25 and October 8, 1919; **43**: 845 (Oct. 17) 1919.

may be severe renal colic and bladder distress or tenesmus, accompanied by chronic cystitis or chronic pyelitis.

HORSESHOE KIDNEY SYNDROME

One of the most characteristic clinical syndromes is that which is associated with horseshoe kidney disease, in which there are always associated anomalies of the pelves and ureters and of the blood vessels. This is characterized by three main clinical features (fig. 3): (1) abdominal pain about the epigastric or umbilical region, (2) a history of chronic constipation associated or not with gastro-intestinal disorders and (3) urinary disturbances with early signs of chronic nephritis. This constitutes the horseshoe kidney syndrome,[10] which I have observed in 96 per cent of my series of more than thirty cases of horseshoe kidney (and which also has been observed independently by Sangree and his associates,[11] Foley,[12] Papin[13] and others). As frequently the abdominal symptoms may in the early stages of this syndrome be the predominating ones, there may often be a history of a considerable period of illness with incorrect diagnosis and treatment before the patient comes to the urologist. Such patients may be acutely ill with pyelonephritis and nephritis and may even show uremic symptoms; others have renal colic due to calculi, resulting from slowly increasing

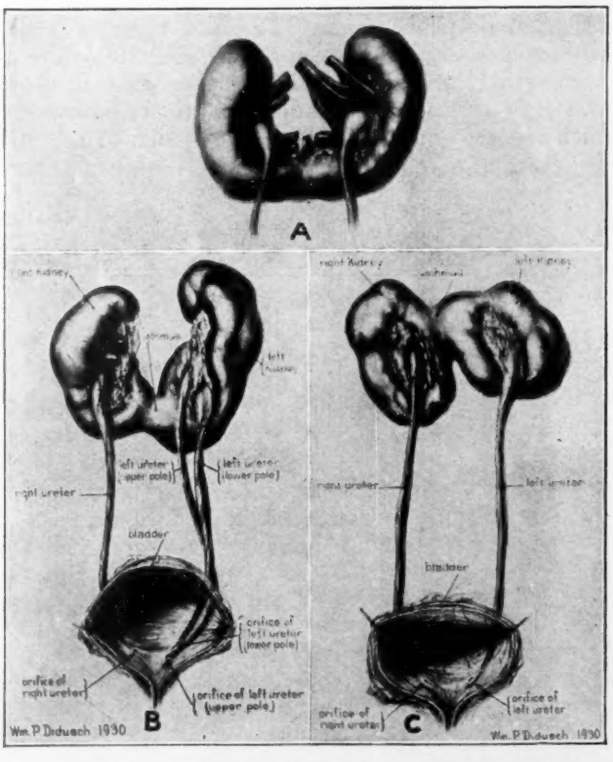

Fig. 2.—Drawings from postmortem specimens of three types of horseshoe kidney: *A*, typical fusion of the two kidneys by the lower pole. *B*, horseshoe kidney with three ureters. *C*, horseshoe kidney with fusion by the upper pole.

urinary stasis. Some patients, however, are referred to the urologist for less advanced urinary symptoms such as albuminuria, microscopic hematuria, pyuria, or hazy or cloudy urine with slight pollakiuria. The abdominal symptoms are due to the fixation of the horseshoe kidney and to its abnormal relations to the surrounding organs, nerves and blood vessels. The urinary symptoms are due fundamentally to lack of renal drainage with resulting infection and inflammation, all directly traceable to the presence of the major renal anomaly.

DIAGNOSIS

Because of the confusing nature of the clinical symptoms in renal anomalies, a most careful and searching diagnostic study is necessary to determine the true nature of the pathologic condition present. After a study of the patient's history, the clinical symptoms and the physical examination, the urologic examination should include cystoscopy, catheterization of the ureters, a renal functional test, roentgenography, pyelography and intravenous urography, and sometimes cystography and pyeloscopy. Cystoscopy shows lesions in the bladder, and what is of special interest in relation to urinary tract anomalies, any anomalous position of the ureteral orifices or anomalies of the trigon.[14] A red and congested mucosa in the bladder may result from ureteral orifices or anomalies of the trigon.[14] A red and congested mucosa in the bladder may result from the infection of the urinary stasis characteristic of horseshoe kidney or anomalies of the ureter or pelvis. Chromocystoscopy may be employed, the time being noted of the first appearance at each ureteral orifice of a dye, usually indigo carmine, injected intravenously; this indicates the relative function of the two kidneys. Other functional tests should be employed and the urine from each kidney collected separately whenever ureteral catheterization is possible. Catheterization of the ureters is an important means of revealing obstruction or ectopic conditions in the ureters, which are so frequently associated with malformations or ectopia of the kidneys.[15]

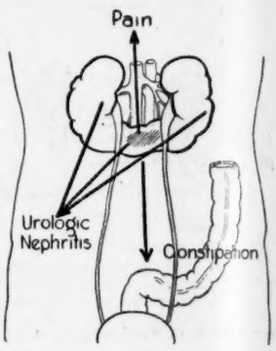

Fig. 3.—The clinical syndrome of horseshoe kidney disease, showing graphically the triad of symptoms composed of (1) pain in the epigastrium or umbilical region, (2) chronic constipation, and (3) urinary symptoms of pyelitis, pyonephritis and chronic nephritis.

In roentgenography, catheterization of the ureters with opaque catheters gives much valuable information in relation to abnormalities in the ureters and in their mode of insertion in the pelvis, as well as indicating abnormalities in the shape or position of the kidney. In addition, plain roentgenography gives other valuable information for diagnosis; the kidney shadows in the plain x-ray film may give the first hint of the presence of an ectopic kidney or fused kidney especially of the horseshoe type. It may show calcified cysts or calculi lying in abnormal positions indicating renal fusion. Sometimes a coraliform stone, the image of which outlines an abnormal type of pelvis or calices, indicates the presence of a malformation of these structures.

Pyelography or urography is the method of examination on which the main dependence must be placed

10. Gutierrez.[9] Gutierrez, Robert: Horseshoe Kidney, in discussion, J. Urol. **27**: 85-88 (Jan.) 1932; **32**: 655-657 (Dec.) 1934.
11. Sangree, Henry; Morgan, David; Klein, Thomas, and Trasi, Rocco: Horseshoe Kidney and the Relation of Nephritis and Calculous Formation to Anomalous Circulation, J. Urol. **32**: 648 (Dec.) 1934.
12. Foley, F. E. B., in discussion on Sangree and others, J. Urol. **32**: 657-659 (Dec.) 1934. Donohue, P. F.: Division of Horseshoe Kidney for Relief of Ureteropelvic Junction Obstruction, ibid. **27**: 59 (Jan.) 1932. Picatoste, J., and Lassaletta, M. G.: A propósito del diagnóstico del riñon en herradura: El signo de Gutiérrez, An. de la Casa de Salud Valdecilla **6**: 103-117 (April) 1935.
13. Papin, Edmond: Foreword from Gutierrez, Robert: The Clinical Management of Horseshoe Kidney, New York, Paul B. Hoeber, Inc., 1934.
14. Lau, F. T., and Henline, R. B.: Ureteral Anomalies, J. A. M. A. **96**: 587 (Feb. 2) 1931. Dossot, R.: Les abouchement extra-vésicaux de l'uretère, Arch. urol. clin. de Necker **6**: 133-164, 1927. Braasch, W. F., and Scholl, A. J.: Pathological Complications with Duplication of the Renal Pelvis and Ureter (Double Kidney), Surg., Gynec. & Obst. **35**: 401-417 (Oct.) 1922.
15. Papin, Edmond: Anomalies congénitales du rein, in Encyclopédie française d'urologie, Paris, Gaston Doin & Cie **3**: 227-322, **1**: 365-506, 1914.

for correct diagnosis of anomalies of the urinary tract. This method, developed in recent years, makes possible the delineation and visualization of the entire urinary tract. There are now two methods of pyelography in use: (1) instrumental, or retrograde, or ascending pyelography, obtained by the injection of an opaque substance through the ureters, and (2) intravenous, or descending, pyelography, or the injection into a vein of a special type of opaque substance (iopax), which is selected in its effect on the kidney shadow.[5] Descending pyelography may also be obtained by oral, rectal or subcutaneous administration of the opaque substance.[16] Although this descending method does not give such clear shadows as the ascending method, it is nevertheless of great value in cases in which ureteral catheterization is impossible owing to obstruction or anomaly of the ureter. For instance, in aplastic kidney when the ureter is rudimentary and not patent the aplastic mass of renal tissue is shown in the intravenous pyelogram whenever a rudimentary artery is present.[7] However, in certain instances when the kidney parenchyma has been entirely destroyed by any pathologic process and there is therefore no kidney secretion, there will be no elimination of the opaque substance and it is necessary to resort to cystoscopy, ureteral catheterization and retrograde pyelography in order to obtain the proper diagnosis. In the diagnosis of renal and ureteral anomalies, when retrograde pyelography is used, it must be emphasized that a bilateral pyelogram is necessary to show the conditions present in the entire urinary tract.

THE HORSESHOE KIDNEY PYELOGRAPHIC TRIANGLE

In the diagnosis of horseshoe kidney, the use of the bilateral pyelogram is essential, as only by this means can the pathognomonic horseshoe kidney triangle be demonstrated (fig. 4). In this type of fused kidney the calices are in reverse position, directed inward toward the spinal column, bringing the lower calices of the two sides in close approximation to each other,

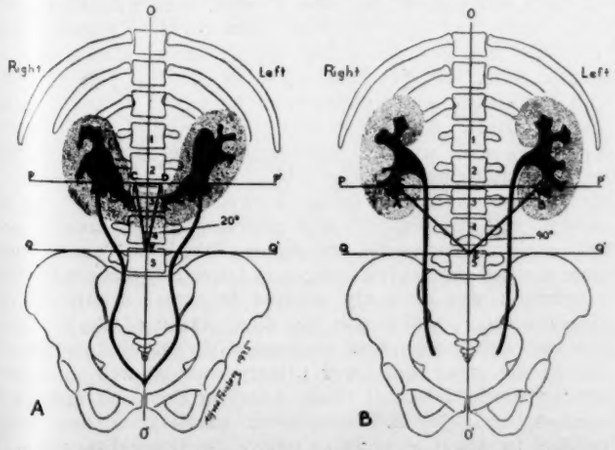

Fig. 4.—Diagrammatic drawings of the pyelographic triangle. *A*, bilateral pyelo-ureterogram of a typical horseshoe kidney showing the pathognomonic horseshoe kidney pyelographic triangle with its minimum basal angle of 20 degrees. *B*, normal bilateral pyelogram showing the normal pyelographic triangle *CED* with the basal angle at *E* measuring 90 degrees, the average measurement in 100 bilateral pyelograms of normally placed kidneys. (From Gutierrez, Robert: The Clinical Management of Horseshoe Kidney, New York, Paul B. Hoeber, Inc., 1934.)

producing a pyelographic picture so characteristic that I have projected from it a triangle—the pyelographic triangle of the horseshoe kidney—with a narrow basal angle usually less than 20 degrees; in contrast with this the corresponding angle of the pyelographic triangle of the normally placed kidney is between 64 and 90 degrees. This pathognomonic pyelographic triangle of the horseshoe kidney, which I have described elsewhere,[8] I have found to be of the greatest value in the diagnosis of this anomaly. Other manifestations in the pyelogram of the horseshoe kidney that are of diag-

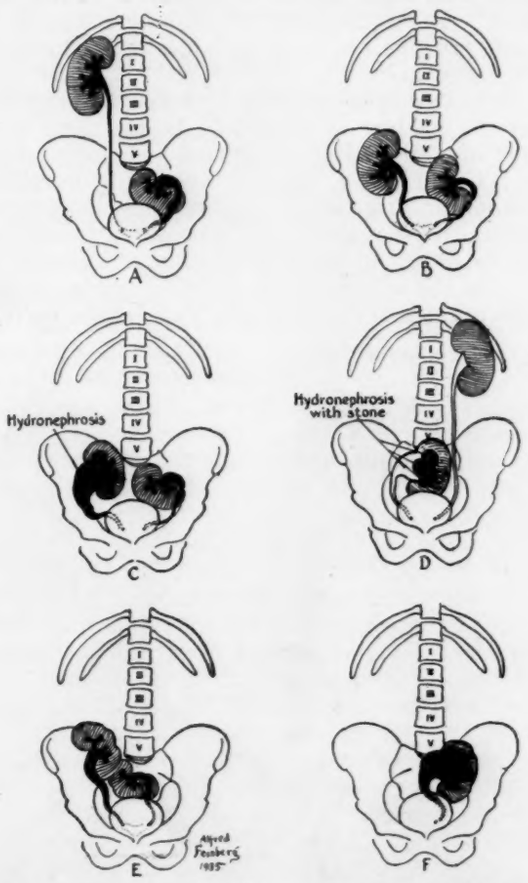

Fig. 5.—Different types of unilateral or bilateral ectopic kidney with or without fusion, and their surgical treatment when associated pathologic conditions are present, as in *C* and *D*, and transperitoneal nephrectomy is indicated: *A*, unilateral ectopic kidney; *B*, bilateral ectopic kidney; *C*, bilateral ectopic kidney with hydronephrosis on one side; *D*, nephrolithiasis with hydronephrosis in a unilateral ectopic kidney; *E*, a fused kidney in crossed dystopia; *F*, a single kidney in ectopia.

nostic value are the possible delineation of the isthmus, the shadows of calculi within the kidney close to the vertebral column or overlapping it, the "flower vase" position of the ureters, and the "bottle neck" shape at the ureteropelvic junction. But of all these the pyelographic triangle of the horseshoe kidney is the most important (fig. 4 *A*).

TREATMENT

In anomalies of the upper urinary tract the treatment to be adopted depends not only on the type of anomaly but also on the presence of any associated pathologic condition. If the anomaly causes no symptoms but has been discovered accidentally, no treatment at all is indicated, as some persons with congenital malformations live indefinitely without developing any clinical symptoms. Such patients should, however, be kept under observation. In some cases only general medical treatment and urologic treatment to secure drainage and relief of infection are indicated. The urologic treatment in these cases includes cystoscopic treatment with lavage of the renal pelvis and the use of indwelling catheters.[17] When surgery is indicated,

16. Beer, Edwin, and Theodore, F. H.: Excretory Urography After Subcutaneous Injection of Neoskiodan, J. A. M. A. **103**: 181 (July 21) 1934.

17. Gutierrez, Robert: The Value of Indwelling Ureteral Catheters in Urinary Surgery, Surg., Gynec. & Obst. **50**: 441-454 (Feb.) 1930.

this does not necessarily imply a radical operation. In some cases of hypoplastic and aplastic kidney it is best to remove the infantile or rudimentary organ entirely, provided the remaining kidney has been found to have adequate function.[7] In single kidney only the most conservative surgical measures can be employed in the case of pathologic conditions arising in such a single kidney.[18] In the treatment of cystic or polycystic kidney conservative measures have also been devised, but if only one kidney is involved and the other kidney has normal or nearly normal function, nephrectomy is often the method of choice.[19] In unilateral ectopic kidney when there is an associated pathologic condition (fig. 5 *C* and *D*), as calculus, infected hydronephrosis or tumor or tuberculosis, nephrectomy by the transperitoneal route is always the procedure of choice, provided the kidney of the opposite side has adequate function. In the treatment of hydronephrosis numerous plastic operations on the pelvis and for the derivation

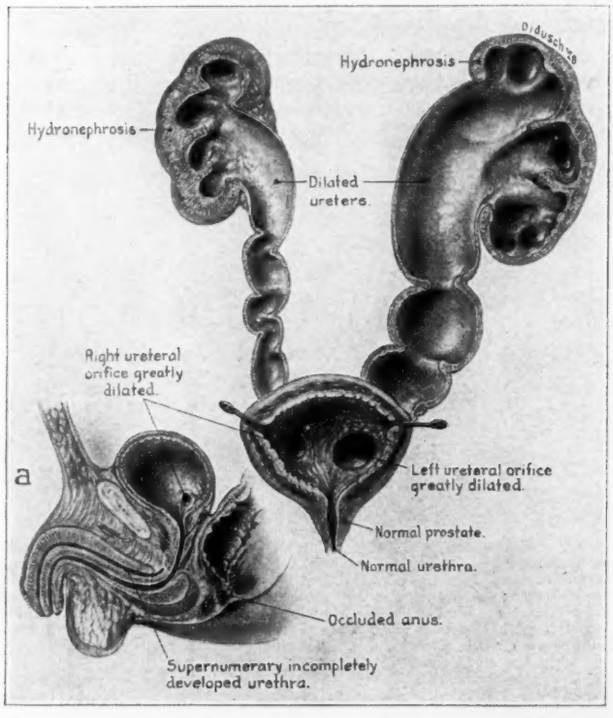

Fig. 6.—Drawing from postmortem specimen showing congenital golf hole type of ureteral orifice causing hydro-ureter and hydronephrosis in a boy 2 years old, with double urethra and occluded anus. Erroneously diagnosed as chronic "pyelitis" and "nephritis"; patient died in acute uremia from renal failure.

of the urine and drainage of the hydronephrotic sac have been used.[1] The conservative operation for hydronephrosis most widely advocated today is the resection of the renal pelvis with complete preservation of the renal blood supply;[20] this type of operation preserves the integrity of the ureter and brings it into a nearly vertical position, which maintains efficient drainage. In some cases of hydronephrosis, however, in which the renal parenchyma has been completely or almost completely destroyed and the kidney rendered functionless, nephrectomy is the operation of choice, always with consideration of the function of the opposite kidney. In some cases with complicating infection and pyohydronephrosis a preliminary nephrostomy, followed by a secondary nephrectomy, is indicated.[21] Where a marked dilatation of the ureter—hydro-ureter—is associated with hydronephrosis, removal of both kidney and ureter is necessary by a combined ureteronephrectomy, as described elsewhere.[22] Also this combined procedure can be successfully used in cases of an ectopic ureter in which the kidney and ureter have lost their entire function, and in cases of double kidney and double ureter in which one is in ectopia opening extravesically, when a combined ureteroheminephrectomy also is indicated.[23]

In horseshoe kidney disease the ideal treatment is the division of the isthmus or symphysiotomy, followed by nephropexy or suspension of one half of the organ.[8] In this operation the ureters and pelves should also be freed from any bands of adhesions and aberrant blood vessels, so commonly present in association with this anomaly. If there are pathologic conditions involving a half of the organ, any conservative operation can be done as in the ordinary type of kidney. If one half of the organ is the site of a pathologic condition that has practically destroyed its parenchyma and rendered it functionless, this half may be removed—a heminephrectomy—provided the remaining half has adequate function.[24] All these operations on a horseshoe kidney should always be done extraperitoneally by the lumbar route of approach in order to avoid peritoneal complications.[13]

REPORT OF CASES

The following three cases illustrate various types of anomalies that caused marked urinary obstruction and confusing symptoms, which required complete urologic and urographic examination for diagnosis and operative treatment:

CASE 1.—A boy, H. R., aged 2 years, born with an imperforate anus, had been suffering from chronic "pyelitis" and "nephritis" and gastro-intestinal upsets; he had always been a delicate child. He was admitted to the hospital July 8, 1922, with convulsions and a temperature up to 103 F. and died in uremia July 11. Autopsy showed the presence of a well developed glans penis with a double urethra, one opening normally into the bladder and the other a blind channel. Examination of the bladder, ureters and kidney showed the golf hole type of ureteral orifices (fig. 6), with enormous hydro-ureters and hydronephrosis and partial destruction of the kidney parenchyma more marked on the left side; also bilateral pyelitis and pyelonephritis; this obviously resulted in actual destruction of kidney function, which was the direct cause of death. This case shows the concomitant occurrence of congenital malformation of the upper and lower urinary tract as well as abnormalities of the intestinal canal. Cases of this kind demand a complete urologic and urographic examination and early surgical treatment in order to relieve the surgical condition.

CASE 2.—A woman, aged 48, had been suffering from occasional lumbar pain and gastro-intestinal disorders since childhood. She had been repeatedly examined in the past twenty-five years for the gastric symptoms and pain in the left upper quadrant. She had also had occasional urinary disturbances with frequency of urination, a slight dysuria and microscopic

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19. Walters, Waltman, and Braasch, W. F.: Surgical Aspects of Polycystic Kidney, Tr. Am. A. Genito-Urin. Surg. **26**: 385, 1933.

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22. Gutierrez, Robert: Indications and Technic of Combined Ureteronephrectomy, Ann. Surg. **93**: 511-543 (Feb.) 1931.

23. Papin, Edmond: Chirurgie du rein, Paris, Gaston Doin & Cie, 1928. Campbell, M. F.: Hemipyonephrosis in Infants and Children: Treatment by Heminephrectomy, Am. J. Surg. **21**: 85-96 (July) 1933.

24. Walters, Waltman, and Priestley, J. B.: Horseshoe Kidney: A Review of Sixty-Eight Surgical Cases, J. Urol. **28**: 271 (Sept.) 1932.

pyuria and hematuria. She had diabetes and had been treated by diet and insulin. For the past five months she had noted shortness of breath and fatigue on slight exertion and had complained of menstrual irregularities. She was given gynecologic examination by Dr. David Barrows at the Hospital for the Ruptured and Crippled, who diagnosed a calcified cyst of the right ovary and, in view of her bladder symptoms, referred her to me for urologic examination. July 16, 1934, on cystoscopic examination, I found multiple flecks of pus at the fundus of the bladder, and a normal ureteral orifice on the right side, which was readily catheterized. On the left side the ureteral orifice was very small and of a pin-point type and could not be catheterized with a No. 6 French catheter; but after the passage of a No. 4 bougie it admitted a No. 5 French catheter, although with difficulty and definite obstruction. The phenolsulfonphthalein test showed normal function of the right kidney but no excretion of the dye in twenty minutes on the left side. The plain roentgenogram revealed the calcified cyst of the right ovary. The retrograde bilateral ureteropyelogram showed a normal kidney and ureter on the right side and an enormous hydro-ureter and hydronephrosis on the left side. The latter was removed by a combined total ureteronephrectomy by my technic described elsewhere.[22] The patient had an uneventful recovery, leaving the hospital in three weeks; she is now free from symptoms nine months after operation. This case illustrates the value of a complete urologic examination in an effort to establish an accurate diagnosis in doubtful cases with abdominal symptoms of long standing that may be due to congenital malformations of the urinary tract.

CASE 3.—M. G., a woman, aged 40, complained of intermittent attacks of retention of urine with dysuria, frequency, burning and difficulty in urination. Cystoscopic examination revealed two pedunculated mobile masses in the bladder; the one at the right side was so large that it covered the beak of the cystoscope. The first impression was that of a large tumor of the bladder. Further inspection of the left ureteral orifice during ejaculation of urine revealed the presence of a small ureterocele and it was then discovered that a large pedunculate mass on the right side was also a ureterocele. As both ureteral orifices were of the pin-point type and could not be catheterized, it was decided to fulgurate both orifices through the cystoscope in an effort to destroy the urterocele and create new ureteral orifices. This was successfully accomplished, and three weeks later when the patient returned for further treatment the cystoscopic examination revealed a good-sized stone about the size of a pigeon egg, which came from the larger ureterocele and which was readily seen in the fundus of the bladder. This stone was crushed with the cystoscopic rongeur and entirely removed by further manipulation. At a later date both ureters were catheterized with ease and a retrograde bilateral ureteropyelogram was made, revealing a congenital malformation of the upper urinary tract—reduplication of ureters and renal pelves on both sides with a slight pyelitis and hydronephrosis. On account of the presence of this infection, a course of cystoscopic treatments was given, with dilation of the ureters and lavage of the renal pelves. This promptly relieved the symptoms and there has been no recurrence to date. This case illustrates the important rôle played by the anomalies of ureters and kidneys in diseases and surgical conditions in the upper urinary tract, which can be cleared up only by proper urologic and surgical treatment.

SUMMARY AND CONCLUSIONS

My purpose in this article is to present a brief review of the congenital anomalies of the kidney and ureter and to call attention to the frequent occurrence of associated pathologic conditions that cause clinical symptoms and require surgical treatment. The classification presented shows the numerous anatomic varieties of these anomalies and also indicates the clinical and pathologic conditions associated with such anomalies.

The clinical syndrome and the pathognomonic diagnostic sign of horseshoe kidney disease illustrate the clinical importance of congenital abnormalities of the urinary tract.

The conclusions to be drawn from this presentation and to be emphasized are the importance of complete urological and urographic examination in every case in which there are obscure abdominal symptoms and minor urinary symptoms, and the excellent results that can be obtained by proper surgical methods when a correct diagnosis is thus established.

30 East Fortieth Street.

THE EMBRYOLOGIC AND CLINICAL ASPECT OF DOUBLE URETER

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The anomaly of duplication of the ureter and pelvis has been recognized for many years. At first it was an anatomic curiosity, found at autopsy or at operation; later it was diagnosed clinically on rare occasions, until now this anomaly is realized to be one of the most common of all urinary malformations and the etiologic factor in many renal lesions.

Double ureters have been classified as: 1. Complete, wherein two pelves on the same side, one superior to the other, drain by separate ureters and open by separate orifices on to the floor of the bladder. The openings may lie side by side or one may be superior to the other. They may also be closely situated or set at some distance apart.

2. Incomplete duplication, the branched or cleft ureter, wherein two pelves and two upper ureters join to enter the bladder by one common ureter and orifice. Both these forms of duplication may be unilateral or bilateral. The bifurcation in the latter group may be situated at any point in the course of the ureter, from just above the bladder up to the renal pelvis. Minor degrees of bifurcation are commonly referred to as bifid pelves. To understand the variations of ureteral duplication, it is necessary to refer back to the development of the urinary system.

The adult kidney and its ducts are preceded in their development by two temporary secretory organs. These to a great extent degenerate—portions of them, and only in the male, being retrieved as the excretory ducts of the genital system. The first of these transient kidneys, the pronephros, is a series of paired segmented tubules arising from the mesoderm of the intermediate cell mass or nephrogenic cord. These tubules run from the seventh to the fourteenth segments and are joined together by a solid cord, which, becoming canalized, continues downward past the fourteenth segment, fuses with the dorsolateral wall of the cloaca, and penetrates it to form the pronephric duct. These pronephric tubules almost immediately degenerate, but the duct persists and is utilized as the excretory duct of the mesonephros, the second of the temporary kidneys.

Fig. 1.—Ureter budding from lower end of wolffian duct. Terminal dilatation surrounded by cells from lower end of nephrogenic cord.

From the Department of Urology, Royal Victoria Hospital.
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The mesonephros, or wolffian body, consists of a larger number of nonsegmented tubules and extends from the sixth cervical to the third lumbar segment. The superior tubules degenerate rapidly and it is probable that there are never more than thirty of these tubules fully developed at any one time. These tubules arise as solid nests of cells from the nephrogenic cord, become hollowed out and elongated transversely, and fuse at their lateral end and open into the existing pronephric duct. In the lower end of this duct, now called the mesonephric or wolffian duct, there appears about the fifth week an epithelial bud. This bud arises from the dorsal wall at a point just where the duct turns anteriorly to pierce the cloaca. It grows upward and backward as a hollow tube. The distal extremity dilates into the primary renal pelvis and is surrounded by mesenchymal cells from the lower end of the nephrogenic cord. The primary renal pelvis on reaching this point divides into superior and inferior pole tubules. Two additional primary tubules grow out laterally between these two. The nephrogenic cells also divide, to surround each tubule like a cap. From this first subdivision are formed the major calices. Division of these primary calices forms the minor calices. The third and fourth divisions provide for enlargement of the calices, and subsequent divisions provide the collecting ducts and tubules. The nephrogenic cells in the meantime have divided in keeping with the divisions of the pelvis and surround each divided branch, ultimately forming a vesicle, which unites with the collecting tubule to form the uriniferous tubule.

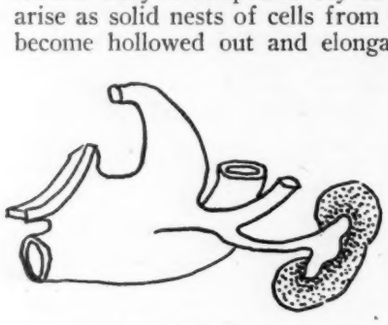

Fig. 2.—Subdivision of primary pelvis into major calices. Each division surmounted by nephrogenic cells.

During this time marked changes take place in the cloaca. In the V-shaped area between the hind-gut and the allantois a wedge of tissue, the urorectal septum, growing downward, meets the cloacal membrane, dividing the cloaca into the rectum and the urogenital sinus and leaving the openings of the wolffian ducts on the ventral side. Openings appear in this cloacal membrane, the anal canal and the urogenital sinus.

From the upper half of this primitive urogenital sinus is developed the adult bladder, the lower portion remaining as the prostatic urethra in the male and the whole urethra and vestibule in the female. By reason of the rapid growth of the bladder, the lower ends of the wolffian ducts are taken up in its growth, thus bringing the ureteral openings down on to the bladder floor. The wolffian ducts and the ureteral orifices gradually become separated. As the greater growth of the bladder occurs in its upper half, the ureteral orifices being superior in position are soon carried upward and laterally, leaving the wolffian ducts, in the lower narrow portion, to become the ejaculatory ducts in the prostatic urethra. In the female the lower narrow portion of the bladder becomes the urethra and vestibule of the vulva, and the orifices of the wolffian ducts are then obliterated.

The development of the two types of double ureter has been shown to arise from two different anomalous processes. The incomplete or branched ureter has been shown by Pohlman [1] to be due to a splitting of the ureteral bud as or after it arises from the wolffian duct. The ureter bud normally divides to form the superior and inferior major calices after the primitive renal pelvis has grown into the lower end of the nephrogenic cord. Thus a premature splitting before it reaches the nephrogenic cells gives rise to the incomplete or branched ureter. Each division forms a separate pelvis, the upper pelvis as a rule being the smaller of the two, with fewer major calices. This division of the ureter takes place at any point between the ureteral bud and the renal pelvis, the commonest site according to Braasch [2] being in the upper third of the ureter. Cases have been reported in which the main ureter branched into three, four and even five divisions. These are really elongated calices, without the formation of a true pelvis. Kretschmer [3] and others have reported cases in which one branch of a bifid ureter ended blindly—evidently a lack of development of the nephrogenic cells forming the cap about its terminal dilatation or a failure of the ureter branch to meet these cells. This condition has been also thought by some to be a congenital diverticulum of the ureter.

Complete duplication has been thought to be due to a similar very early splitting of the ureteral bud, the twin ureters being so closely placed that, by the expansion of the lower end of the wolffian duct, they would be drawn on to the bladder floor as separate openings. Chwalla,[4] on the other hand, has shown that they are most probably due to the formation of twin ureteral buds, arising one above the other on the lower end of the wolffian duct. These twin ureters then grow upward and laterally, as does the single ureter, and meet the nephrogenic cells in the upper sacral region, forming separate renal pelves. The upper pelvis as a rule is the smaller. On the distance separating them depends whether the halves of the kidney are entirely separate, fused by connective tissue bands, or one solid mass of secreting kidney tissue. On the distance separating the pelves depends the blood supply, whether it is supplied by one main renal artery, a branched vessel, or separate renal arteries from the aorta.

Changes due to growth of the bladder occur in the lower ends of the ureters. In the drawing out of the lower ends of the wolffian ducts on to the bladder floor to form the trigon, the lower bud, that to the lower pelvis, reaches the bladder first and in the rapid growth of the bladder is drawn cranially and laterally away from the openings of the wolffian ducts. The ureter to the superior pelvis being drawn down at a later period, its orifice is in a lower and more medial position. This as a rule produces a crossing of the ureters, usually just above their insertion into the bladder wall. Additional crossings may or may not occur, as the lower ureter is more redundant, owing to the rotation of the lower pole of the kidney through an angle of 45 degrees to reach the normal upright position.

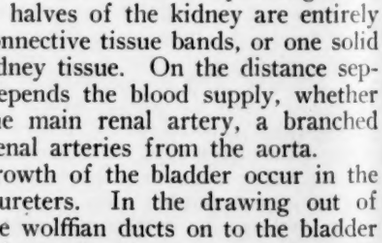

Fig. 3.—Early branching of ureteral bud, with formation of incomplete double ureter and pelvis.

Low implantation of the ureter to the upper pelvis at or near the vesical neck is due to the distance sepa-

1. Pohlman, A. G.: Am. Med. 7: 987, 1904.

2. Braasch, W. F., and Scholl, A. J. Jr.: J. Urol. 8: 507 (Dec.) 1922.
3. Kretschmer, H. L.: J. Urol. 30: 61 (July) 1933.
4. Chwalla, R., quoted by Spitzer and Wallin.[5]

rating the two ureteral buds. A high origin of the upper bud will retard its arrival on the bladder floor, so that it will open nearer to or even outside the vesical neck in the posterior urethra.

Similarly ectopic openings of the ureter depend on the same high origin of the upper bud. Their high position precludes an opening on the bladder floor and they retain their opening in the wolffian duct. In the male this brings about the anomaly of the ureter to the upper pelvis opening into the vas deferens, either above the seminal vesicle, in the region which ultimately dilates into the seminal vesicle or below it, in the ejaculatory ducts. In the female a high point of origin of the upper ureteral bud permits of the implantation of its orifice at any point in the shorter urethra. As the vestibule arises from the lower half of the urogenital sinus it may also be implanted on its surface. If the upper ureter retains its opening in the wolffian duct in the female, it will remain attached to a duct which normally should degenerate and the opening of which should disappear from the floor of the urogenital sinus. In this case there are, I think, three possibilities: If the wolffian duct degenerates, the ureter will end in a blind cyst at some point between the urethra and the vagina; if it persists the ureter will open at the vestibular margin of the upper part of the hymen, or if the wolffian duct fuses with and opens into the lower end of the downgrowth from the muellerian duct it will open into the vagina.

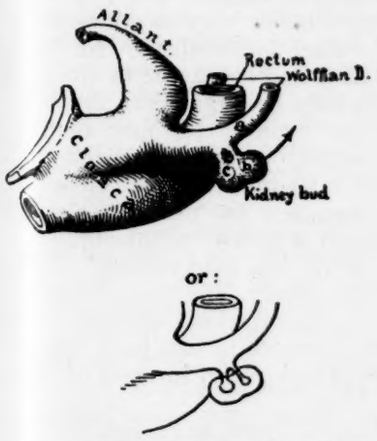

Fig. 4.—Formation of twin buds in lower end of wolffian duct. Two separate ureters and pelves—each capped by nephrogenic cells. (Brödel.)

Anomalies of these three types have been frequently reported. Spitzer and Wallin [5] believe that the supernumerary ureter, opening on to the vestibule or into the vagina, is due to persistence of the wolffian duct, the secretory tissue found about its terminal dilatation being persistent mesonephric tubules. This theory in the male would necessitate a longitudinal splitting of the wolffian duct with the formation of an additional tube and the persistence of tubules not otherwise retained in the formation of the epididymis. In the female one would expect the persistent mesonephric tubules to be situated in the broad ligament and not superior to the permanent kidney or metanephros.

From a clinical point of view, the anomaly of double ureter and pelvis is extremely important. It is a well recognized rule that an abnormal organ is more liable to disease than a normal one, so that the possibility of this duplication must be kept in mind in investigating all renal lesions.

Over a period of seventeen years in the Royal Victoria Hospital we have diagnosed sixty-three duplications of the pelvis and ureter. Of this number twenty-three were complete and three of these bilateral. The remaining forty were incomplete or branched in type, two of these being bilateral.

Of this total number only eleven, or 17.5 per cent, were discovered accidentally and were free from other disease. The remaining fifty-two were involved in an associated renal lesion. The lesions most frequently found were hydronephrosis or hydro-ureter, and infection, either alone or in combination.

There are of course in this condition of double ureter no symptoms per se, any symptom present being due to an associated lesion. Therefore the original finding of this condition was from autopsy material or at the operating table. With the invention of the cystoscope, complete duplications were found by the presence of additional ureteral orifices in the bladder. This is still the simplest method of diagnosis; but occasionally an additional orifice is overlooked, especially in the presence of marked inflammation, blood clot, diverticulum or an enlarged prostate. In this instance the pyelogram will aid, for the finding of a small or hypoplastic renal pelvis confined to one pole of the kidney will send us in search of the pelvis in the remaining segment. With the general use of pyelographic mediums it became possible to diagnose the incomplete or branched type of double ureter and pelvis. It has been shown by many previous writers that the most important procedure in the making of pyelograms is to withdraw the catheter well below the renal pelvis and to inject an additional amount of solution so that any branching ureter and pelvis may also be filled. In this connection it may be necessary to plug the ureteral orifice with a Garceau catheter, so that the solution will enter the narrow or constricted branch, especially if it branches near the ureteral orifice.

This procedure is borne out by our own figures, for in the first twelve years, out of twenty-seven cases, only eleven branched ureters were found, while in the last five years twenty-nine were diagnosed. Undoubtedly the diagnosis has been much simplified in the last few years by the additional use of excretion pyelography.

In the condition of an ectopic supernumerary ureter, the diagnosis at least in the female is often suggested from the history. In these cases, with an ectopic ureter opening into the urethra vestibule or vagina, the history of incontinence from birth accompanying an otherwise normal urination should provoke an earnest search for an additional orifice in one of these locations. In certain cases incontinence is not a feature, as in Bruce's [6] and Muschat's [7] recently reported cases. In one an infected hydroureter set in force symptoms resembling a pelvic peritonitis, and in the other the cystic dilatation of the termination of the ureter in the urethra caused partial retention and urosepsis.

Fig. 5.—Drawing down of lower ureter to bladder floor, in expansion of the end of the wolffian duct to form the trigon. (Brödel.)

Excretion pyelography may or may not be of use in these cases, as the upper or diseased segment may not excrete sufficient of the iodine solution to cast a shadow. Similarly intravenous indigo carmine can be used in an

5. Spitzer, W. M., and Wallin, I. F.: Ann. Surg. **88**: 1053 (Dec.) 1928.

6. Bruce, G. G.: Brit. J. Surg. **20**: 672 (April) 1933.
7. Muschat, M.: Internat. Clin. **1**: 159 (March) 1934.

attempt to find an additional orifice. This may fail, owing to the same lack of secretion and also because the supernumerary ureter is frequently obstructed with a marked slowing in the rate of excretion.

If an ectopic opening is found, it can usually be catheterized for sufficient distance to inject an iodide solution or even to collect a specimen for examination. The ureteropyelogram in these cases is typical—a tortuous and dilated lower ureter rising to the superior pole of the kidney and surmounted by a normal or dilated hypoplastic renal pelvis.

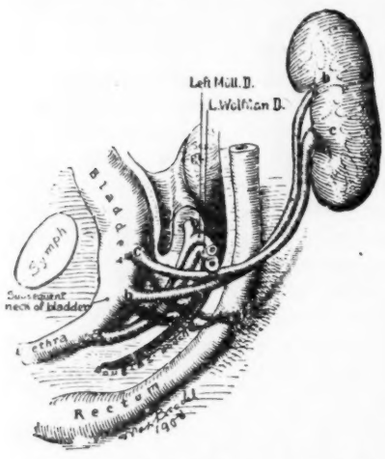

Fig. 6.—Orifice of the lower ureter is drawn upward and laterally as the result of the growth in the upper half of the primitive bladder. Orifice of the upper ureter reaches bladder at later period and is lower in position on the trigon. Wolffian ducts remaining in the lower half of the original urogenital sinus become the ejaculatory ducts in the posterior urethra. (Brödel.)

In the male an ectopic ureteral opening is more difficult to diagnose and then only when the symptoms of infection, hydronephrosis, hematuria or calculus cannot be satisfactorily explained following the usual routine examination. Here with careful search of the posterior urethra, coupled with the use of indigo carmine intravenously, the ectopic ureteral orifice may be found. Excretion pyelography may show the additional superior pelvis. At times the diagnosis may be suggested by the small pelvis found in the lower pole of the kidney shadow, even before the ectopic ureter is searched for.

The anatomic variations of the anomaly are many. The kidney may be of normal size and conformation or even slightly larger. The surface may be uniform or show a definite furrow or constriction at the junction of the two segments. This fusion may be complete or simply fibrous in nature or the two segments may be entirely separate. The superior portion then occupies the normal position with the inferior one at some lower level.

The blood supply to the two segments, according to corrosion specimens, is entirely separate, although only one main vessel may enter the kidney substance. If the distance separating the two pelves is increased, the blood vessels are more apt to branch before entering the kidney. At times individual arteries to each segment arise from the aorta.

The renal pelves are situated one superior to the other. The upper pelvis or, as it is sometimes called, the supernumerary or hypoplastic pelvis is as a rule smaller, with fewer major and minor calices. Even though it is smaller and apparently drains less kidney substance, Braasch states that the function of the two segments is equal.

The ureter varies of course as to whether it is a complete or an incomplete duplication. If complete, the ureter to the upper pelvis is as a rule straighter in course and somewhat narrower than its mate, which is usually wider and more liable to redundance. They may cross one or more times or may lie side by side. Although usually having separate sheaths, they may be enclosed partially or completely in a common sheath.

The situation of their orifices in the bladder varies. They lie on or at the side of the ureteral ridge, the orifice of the ureter to the lower pelvis being superior or lateral, while that of the upper pelvis is medial and inferior. It is the latter orifice that is frequently displaced, either in a lower position on the trigon or near the vesical neck or in some abnormal position such as the urethra or vas deferens in the male, or the urethra vestibule or vagina in the female.

The incomplete or cleft ureters vary according to the region in which they divide, the commonest site being in the upper third. The branches may be of the same caliber or one of them may be larger than the other. Their openings into the main ureter may be free, although constriction of the opening of one branch is a frequent occurrence. Hydro-ureter and hydronephrosis are common sequelae. The ureteral orifice of a bifid ureter differs in no respect from the normal.

Triplication of the ureter has been reported as well as division of the main ureter into three, four and even five upper branches, the pelves in these cases being really the major calices. Double ureters both complete and incomplete are frequently found in cases of fused or horseshoe kidney.

From a pathologic point of view, any lesion that may be found in a normally developed kidney can of course be found in an anomalous double kidney. In fifty-two of our sixty-three double ureters, some pathologic lesion was present. The two predominating lesions were obstruction, with resultant hydro-ureter and hydronephrosis, and infection. Evidence of hydronephrosis was present in forty-eight of these pelves and ureters, and fifty of the fifty-two showed evidences of infection. In the majority of cases the lesion was one of infected hydronephrosis.

Of the fifty-two cases only thirteen were treated by operative measures, and these all belonged to the group of incomplete bifurcations. Seven were nephrectomies for pyonephrosis; in six of these the lesion involved both pelves. One involved only the lower pelvis, but the danger of microscopic invasion of the upper segment, with consequent secondary nephrectomy, prevented us from attempting a partial resection.

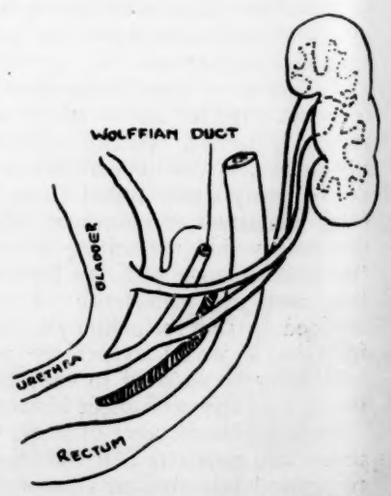

Fig. 7.—High origin of the upper ureter bud causes failure to reach the bladder floor. The ureter to the upper pelvis then opens into the wolffian duct.

One nephrectomy was performed for a left renal tuberculosis; the upper pelvis was free from apparent infection, but on microscopic section tubercles were found in the parenchyma of the upper segment. One hydronephrosis of the lower segment with nephroptosis was treated by freeing adhesions about the point of bifurcation of the ureters, followed by nephropexy. There were two nephrectomies for calculous pyonephrosis and two pyelotomies for calculus in the lower pelves. Ureteral calculi were present in six cases, three in the complete double ureters and three

in the incomplete, all of which were passed either before or following ureteral dilation.

Heminephrectomy was not performed in any of these cases, although many successful operations have been recorded by others over a period of years. In my opinion the extent of parenchymal invasion is difficult to ascertain grossly, the urine examination from the apparently normal pelvis often misleading, especially in cases of the incomplete or branched type. It is granted that the operation of heminephrectomy is ideal for the purpose of conserving kidney tissue in the presence of some lesion in the opposite kidney.

In the operative series, six involved the right kidney and seven the left. Three were in males and ten in females. The incomplete bifurcations in the upper third were twice as many as the branchings in the middle and lower thirds.

In the whole series we have found the lower pelvis more than twice as often involved in some lesion as in the upper. On the other hand, there have been no supernumerary ureters with an ectopic opening. It is a recognized fact that in these cases it is the upper pelvis that is the seat of infection and hydronephrosis.

In the small series reported I cannot offer figures of statistical value, many lesions not being encountered.

The treatment as far as the double ureter is concerned is really the treatment of the accompanying surgical lesion, for the ectopic supernumerary ureter, complete or partial ureterectomy with nephrectomy or heminephrectomy as the conditions indicate.

SURGICAL TREATMENT OF ANOMALIES OF UPPER URINARY TRACT IN CHILDREN

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NEW YORK

An anomalous organ is more prone to disease than a normal one. The incidence of anomalous development is highest in the urinary tract. If congenital narrowing of the urethral meatus is disregarded, anomalies occur more often in the upper than in the lower urinary tract. If anomalies exist in the lower urinary tract or in the genital system, the chances are better than one in three that the upper urinary tract is anomalous. The suggestive diagnostic corollary of this observation is at once apparent.

In the main, anomalies of the upper urinary tract are important as (1) the renal reserve is diminished, (2) the kidney is misplaced or malformed, (3) there is urinary obstruction or (4) there is abnormal discharge of urine (ectopic ureteral orifice). Chief interest focuses on the obstructive uropathy for it is here that one encounters (1) congenital hydronephrosis, which comprises the majority of all hydronephrosis in children, and, even more important if incidence and morbidity are the criteria, (2) chronic pyuria. In a series of 282 personal cases of hydronephrosis in infants and children, the lesion was secondary to an upper tract anomaly in 193 instances, or 68.8 per cent. In a series of 580 personal cases of persistent pyuria in the young —so-called chronic pyelitis—a total of 206 anomalies of the upper urinary tract were demonstrated in 179 patients, or 30 per cent.

Presenting symptoms in anomalies of the upper urinary tract may be (1) persistent pyuria and its attendant syndrome,[1] (2) masses along the course of the upper tract (hydronephrosis or ectopic kidney) and, rarely, (3) urinary discharge from an ectopic ureteral orifice or (4) uremia. Doubt concerning the nature of the loin mass entitles the patient to a complete urologic examination, as does failure of intensive medical therapy to cure chronic pyuria within four weeks.[2] The recognition of an ectopic ureteral opening may or may not require cystoscopic examination. Uremia may result from congenital paucity of renal parenchyma or may be due to renal destruction by obstruction, infection or stone. Its cause or causes in anomalous development of the upper urinary tract may be recognized only at autopsy. Yet early identification will sometimes enable the physician to preserve the child's life.

Fortunately, the majority of anomalies of the upper urinary tract are amenable to surgical treatment. Lack of space necessarily circumscribes the present consideration of therapy of these lesions. It is hoped, however, that interest may be created in the recognition and treatment of these common though usually unrecognized malformations, which directly or indirectly induce a high morbidity and mortality, which are in a large measure preventable. For example, in a protocol study of 26,480 autopsies (including 12,080 children) I [3] found 136 cases of ureteral reduplication, an incidence ratio of 1:195. Yet in the 580 children with chronic pyuria just referred to and subjected to complete urologic examination I found fifty-eight instances, or one in ten cases—nearly twenty times the normal incidence. Similar evidence concerning other anomalies (ureteral stricture, horseshoe kidney, ectopic kidney, and so on) can readily be adduced to show that anomalous development predisposes to disease.

Preoperative and postoperative surgical care in children demands the liberal administration of fluids, the free employment of blood transfusions and the prevention or combat of acidosis with dextrose. These considerations together with the conservation of body heat and a minimum of surgical trauma (sharp rather than blunt dissection, rigid hemostasis) will result in a surprisingly low mortality in radical surgery of the upper urinary tract even in extremely young children (tables 1 and 2). When children are given the supportive treatment just outlined they exhibit amazing recuperative powers. Because children's kidneys, injured by obstruction, commonly show a remarkable restoration of function when afforded free drainage, conservative renal operations may be employed disproportionately more often in the young than in adults. Delayed diagnosis and a radical operation are usually reciprocal. Urologists are repeatedly impelled to perform nephrectomy for advanced hydronephrosis in children in whom recognition of the lesion two years earlier would doubtless have meant preservation of the organ. This is particularly and commonly true in ureteral obstruction by aberrant vessels or congenital stricture.

In almost every case, open drop ether is the anesthesia of choice.

Anomalies and their surgical treatment here briefly considered are (1) kidney: reduplication, abnormal

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In the present discussion we are concerned only with the ureters, pelves and kidneys.

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1. Campbell, M. F.: Chronic Urinary Infection in Infants and Children, J. A. M. A. **99**: 2231-2234 (Dec. 31) 1932; Chronic Pyuria in Juveniles, J. Urol. **31**: 205 (Feb.) 1934.
2. Campbell,[1] Campbell, M. F.: Indications for Urological Examination in Infants and Children, M. J. & Rec. **133**: 392 (April 15) 1931.
3. Campbell, M. F.: Pediatric Urology (in completion).

mobility, polycystic, solitary cystic and horseshoe formation; (2) ureter: reduplication, abnormal insertion, ureterocele, ectopic opening, blind ending, stricture, kink, valves and vascular obstruction (table 1).

KIDNEY

Renal agenesis (1:662 in 26,480 autopsies [3]) is, of course, not amenable to surgical treatment. Rarely, an aplastic organ must be removed for pain or infection. The surgical importance of agenesis, aplasia or fused solitary kidney formation is that the only functioning parenchyma may be unwittingly excised. Preoperative urologic study, however, should prevent such a catastrophe. Congenital ectopic kidneys as distinguished from abnormally mobile organs are firmly held in position by an anomalous vascular supply defying any attempt to elevate the kidney. In a 12 year old girl with a fused pelvic kidney the renal mass caused suprapubic bulging and severe backache and deeply compressed the bladder. Belt suspension gave some relief.

Congenital Abnormal Mobility.—This is rare. No operation is indicated unless there is urographic evidence of obstructive uropathy. Even with obstruction, ureteral dilation by bougie may suffice. When operation is indicated, nephropexy should be performed. Several methods are available.[5] I prefer Deming's [6] operation, which consists of making a hammock or sling for the kidney by carrying the anterior layer of the renal fascia and the posterior peritoneum back under the kidney, sewing them high to the quadratus lumborum. This operation spares the kidney from trauma; the renal capsule is not penetrated. I have been gratified with the results in the eight children in whom I have employed the operation; not always for abnormal renal mobility, however. The youngest patient was 5 months old.

Polycystic Kidney.—This condition is seldom recognized during life in children and unless infection, hematuria, stone or obstruction demand intervention

TABLE 1.—*Surgical Treatment in Anomalies of the Ureter, Pelvis and Kidney in Children; 170 Procedures in 149 Patients*

	Nephrectomy	Ureteronephrectomy	Ureteroheminephrectomy	Resection of Horseshoe Kidney	Nephrostomy	Nephropexy	Ureteropyeloplasty	Resection of Aberrant Vessels	Ureterostomy: Unilateral	Ureterostomy: Bilateral	Bilateral Resection of Ureters	Transvesical Bilateral Ureteral Meatotomy	Fulguration Ureterocele	Ureteral Dilation	Ureteroneocystostomy (Vesical Diverticulectomy)	Exploratory
Kidney																
Agenesis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Reduplication*	2	1	8	..	..	..	..	..	..	..	..	..	..	..	..	..
Horseshoe	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Ureter																
Reduplication†	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ureterocele	..	4	..	..	..	..	..	..	..	..	..	..	3	7	..	..
Ectopic opening	..	1	4	..	..	..	..	..	..	..	..	..	..	..	4	..
Stricture																
Ureterovesical	..	9	5	..	5	1	..	..	2	8	3	6	..	60	..	..
Ureteropelvic	12	..	..	1	5	5	7	..	..	..	..	..	..	1	..	..
Body ureter	1	..	1	..	..	..	..	..	..	..	..	..	..	4	..	..
Kink	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Aberrant vessels																
Ureteropelvic	8	..	..	..	..	1	..	3	..	..	..	..	..	..	..	..
Lower ureter	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Congenital atony	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total‡	23	15	8	1	10	8	7	4	2	8	3	6	3	72	4	1

* Hemipyonephrosis.
† See kidney.
‡ Duplications allowed: three deaths: ureteronephrectomy, resection horseshoe kidney, ureterostomy.

Kidneys in low ectopy are best attacked by low extraperitoneal approach. Pelvic kidneys are best approached transperitoneally and, unless there are strong contraindications, nephrectomy is the procedure of choice.

Reduplication.—This common anomaly (1:195)[3] permits renal resection when only half of the reduplicated organ is surgically diseased. Half a kidney—usually capable of supporting life by itself—is preserved. As a rule, the preoperative urogram will indicate the practicability of this operation and may be of aid at the operating table.[4] In about half of the cases there is demarcation between the two halves of the organ, either a groove or a striking difference in cortical appearance. Frequently the diseased portion is wrinkled or scarred. I have encountered eleven cases of hemipyonephrosis in infants and children, in eight of which ureteroheminephrectomy was satisfactorily performed. Usually the remaining segment of the kidney was suspended. In three instances of hemipyonephrosis, nephrectomy seemed indicated, as it is likely to be when both of the reduplicated pelves show disease which conservative treatment or operation cannot be expected to cure. The youngest patient in whom I performed renal resection was 5 months old.

4. Campbell, M. F.: Hemipyonephrosis in Infants and Children, Am. J. Surg. **21**: 85 (July) 1933; Ureteroheminephrectomy in Infancy, J. Urol. **26**: 433 (Sept.) 1931.

the patient is best left alone, meanwhile being treated as having nephritis. If profuse hematuria cannot be checked by blood transfusion or the intrapelvic injection of 5 per cent silver nitrate or if there is extreme renal pain, nephrectomy or puncture of the larger cysts must be considered. With nephrectomy a half and with nephrotomy a third will die within the first postopera-

TABLE 2.—*Ages of Patients in Table 1*

0- 6 months	9
7-12 months	24
1- 3 years	43
4- 6 years	34
7-10 years	26
11-13 years	13
Total	149

tive month. In general, the less surgical treatment is employed in polycystic renal disease the longer will the patient live. A large solitary renal cyst should be resected unless the entire organ is destroyed.

Horseshoe Kidney.—Heminephrectomy by division of the organ through the isthmus is the treatment of

5. Edebohls: Am. J. Obst. & Gynec. **31**: 161, 1895. Bundschuh, E.: Zentralbl. f. Chir. **52**: 751 (April 4) 1925. Lowsley, O. S., and Bishop, C. C.: Surg., Gynec. & Obst. **57**: 494 (Oct.) 1933. Melen, D. R.: Nephropexy by Means of a Fascial Hammock, J. A. M. A. **100**: 1167 (April 15) 1933. Strode, J. E.: J. Urol. **32**: 171 (Aug.) 1934.
6. Deming, C. L.: Nephroptosis, J. A. M. A. **95**: 251 (July 26) 1930.

advanced unilateral disease in this anomaly. I did this in a 10 year old girl with a reduplicated right half of a horseshoe kidney. The outlet of the upper pelvis of the reduplicated right side was densely strictured, thereby converting the pelvis into a cyst holding more than 1 liter. This girl's death from shock affords two important surgical lessons. With large fluid renal tumors, in children at least, a two stage operation—(*a*) initial evacuation of the fluid collection by indwelling ureteral catheter or by nephrostomy, followed at a later date by (*b*) nephrectomy—will often avoid fatal shock. I observed this shock phenomenon also in a girl, aged 13 months, with a massive perirenal hydronephrosis [7] the sudden evacuation of which was promptly followed by fatal shock. Since then I have employed initial decompression of large renal fluid collections successfully in three children. Moreover, in the 10 year old girl a large aberrant vessel was accidentally lacerated close to the aorta and high under the liver; this caused alarming bleeding, which was checked with difficulty. Despite voluminous transfusion and other supportive measures, the child died three days later.

URETER

Reduplication.—Ureteral duplication is the fundamental condition in renal reduplication and what has been said regarding the latter applies to double ureter.

Abnormal Insertion.—Occasionally the insertion of the ureter into the renal pelvis is unusually high, giving rise to a spur-valve formation at the junction. Unless mobilization of the ureteropelvic junction and high suspension of the kidney afford normal drainage (and it is almost certain that they will not) the ureter should be reinserted low in the pelvis (ureteropyeloneostomy) to permit dependent drainage. Excision of the spur-valve is not satisfactory. Nephrectomy is frequently demanded.

Ureterocele.—Sometimes designated as intravesical cyst of the ureter, ureterocele is important only because the ureteral orifice is almost always minute. In other words, obstruction is the essential lesion. I encountered ureterocele in nineteen instances in 580 children with persistent pyuria. Occasionally it is sufficient to dilate the tight ureteral orifice with bougies. As a rule, however, it is necessary to split the ureterocele wider with a cystoscopic electrode or, in cases not amenable to this treatment, by direct incision through the open bladder. In a 6 year old girl I amputated an enormous ureterocele, taking a running hemostatic suture around the excisional margin.

Ectopic Ureteral Opening.—This condition requires surgical treatment only when the renal segment drained by the ectopic orifice is diseased or the anomaly produces incontinence. Although a single ureter may have an ectopic orifice, the abnormal opening is usually that of the ureter from the upper pole of a reduplicated kidney. In most instances this portion of the organ is diseased. When the ureter is single and the kidney is worth saving, transplantation of the ureter to the bladder (ureteroneocystostomy) is indicated. When the ectopic ureter is from a reduplicated kidney, ureteroheminephrectomy is the usual indication. I performed ureteroheminephrectomy in four children and ureteronephrectomy in one with an ectopic ureteral orifice and chronic pyuria. In two other instances, operation was refused. The youngest patient operated on was 5 months old. One of these patients, a girl of 13 months, had bilateral ureteral reduplication. The ureter from the right upper pelvis opened into the posterior urethra; that from the pyonephrotic left upper pelvis opened in the vestibule just below the urinary meatus. Left ureteroheminephrectomy was successfully performed. The right side required no treatment since there was neither notable infection nor urinary incontinence.

Blind Ending Ureter.—This lesion is important only when the ureter ends blindly below and the ureter and pelvis are converted into a cystic mass which may simulate an abdominal tumor. Excision is the treatment; this may require nephrectomy or ureteroheminephrectomy.

Stricture.—In the absence of superimposed infection, congenital ureteral stricture seldom shows scarring. Rather there is narrowing of the lumen of the duct comparable to the congenital narrowings not infrequently seen in the intestinal tract, in the biliary duct and in the urethra. The order of incidence of congenital ureteral stricture is (1) ureterovesical junction, (2) ureteropelvic junction and (3) the body of the ureter. Ureteral stricture was demonstrated in 101 of 580 cases of chronic pyuria in children (right forty-seven, left thirty-one, bilateral twenty-three). It was at the ureterovesical junction in fifty-seven of these, at the ureteropelvic junction in forty and in the body of the ureter in fourteen. Hydronephrosis results from clinically important stricture; the nearer the stricture approaches the kidney, the greater and more rapid will be the hydronephrotic destruction.

Stricture at the Ureterovesical Junction.—If mild, these lesions may be dilated by bougies passed through a cystoscope. In infants, this dilation must usually be performed by the passage side by side of two, three or more 4 F. catheters. I have recently devised a dilating cystoscope of 17 F. caliber which permits the passage of a 10 F. bougie, and in my hands this equipment has greatly facilitated the nonsurgical treatment of ureteral stricture in infants and children. If the stricture at the ureterovesical junction is extremely tight or dense, as evidenced by inability to pass a filiform catheter or by failure of the stricture to respond to dilation, the lesion should be cut transvesically through the open bladder,[8] as I have in six children. In four of these cases the preoperative condition of the patient was desperate; preliminary bilateral ureterostomy or nephrostomy was performed. Division of the ureteral stricture was postponed until restitution of renal function permitted further operative steps. In two of these cases bilateral resection of from 4 to 6 inches of redundant ureter and end-to-end anastomosis accompanied the transvesical ureteral meatotomy. These two patients were boys and when surgical treatment was begun were 7 and 10 months of age respectively. In the last instance the phenolsulfonphthalein output was zero in two hours and the nonprotein nitrogen was 138 mg. per hundred cubic centimeters of blood. At intervals of approximately two months (*a*) bilateral ureterostomy and suprapubic cystotomy, (*b*) transvesical ureteral meatotomy, (*c*) bilateral ureteral resection with end-to-end anastomosis and (*d*) transurethral resection of congenital valves of the prostatic urethra were successively carried out. At the age of 18 months the blood chemistry was normal, the phenolsulfonphthalein output was 50 per cent in two hours, and the urine contained only a small amount of pus. Three years postoperatively the boy's development is normal.

7. Campbell, M. F.: Perirenal Hydronephrosis, Am. J. Surg. **19**: 523 (March) 1933.

8. Campbell, M. F.: Congenital Bilateral Ureterovesical Junction Stricture in Infants and Children, J. Urol. **26**: 529 (Oct.) 1931.

Stricture of the Body of the Ureter.—This will usually respond to cystoscopic ureteral dilation. Rarely the stricture is inflammatory and surrounded by periureteral sclerosis, the liberation from which may enhance the results of instrumental dilation. Plastic operations on the body of the ureter for stricture can scarcely be expected to be successful.

Stricture at the Ureteropelvic Junction.—This lesion in children commonly produces early hydronephrotic destruction of the kidney, which demands nephrectomy. Occasionally the lesion is bilateral, as in two young patients of mine, or involves a congenital solitary kidney, as in a boy of 5 years (1,200 cc. hydronephrosis). Only permanent nephrostomy drainage preserved their lives. In the boy with the solitary kidney, ureteropelvoplasty was defeated by infection. My experience with ureteropelvoplasties in children (eight cases) has not been encouraging. Plastic methods available included the Heinecke-Mikulicz principle (longitudinal incision through the stricture with transverse suture), the Finney pyloroplasty type of operation, the Ramsted pyloroplasty type of procedure (cutting through the narrowed ureteral wall down to but not penetrating the mucosa), or the Schwyzer-Foley [9] operation (Y-plastic), which has given such satisfactory results in adults. When the hydronephrosis is advanced, preliminary indwelling cathether drainage of the pelvis or nephrostomy is advisable until the recuperative power of the kidney has been determined. If the renal function is not restored to at least half normal, or if infection is well established, nephrectomy is usually the operation of choice when the condition of the renal mate permits.

Kinks.—Congenital ureteral kinks are indeed rare. They are almost always found where the ureter leaves its peritoneal attachment to pass to the kidney. In monovular twins seen at autopsy at Bellevue Hospital a sharp S-shaped kink was found at precisely the same point in each upper left ureter.[10] There were also identical transduodenal bands. I have seen but one child, a girl of 5 years, who required operation for congenital ureteral kink. There was no distal obstruction. The kink, located at the level of the third lumbar transverse psoas, appeared identical in both the excretory and retrograde pyelograms and at operation was found firmly fixed by a dense band of scar, which crossed from the lower pole of the kidney to the spine. A mild hydronephrosis resulted. The only symptom was constant pain in the loin and this was cured by mobilization of the angulated ureter and nephropexy. Nevertheless, ureteral dilation has been periodically performed since operation, now once in six months.

Aberrant Vessels.—Only those vessels which compress the ureter are of importance here.[11] In almost every instance they will be found to be lower polar vessels passing to the renal artery or vein, the aorta or vena cava, or the common iliac artery or vein. Yet I have a proved case of vascular obstruction of the lower ureter, diagnosed preoperatively, in a girl of 13 months, and in three other children this seemed the likely diagnosis but lacked confirmation. In the girl an artery, a vein and a dense fibrous band compressed the ureter 1 cm. above its junction with the bladder. The vessels were believed to be anomalous uterine vessels. Following division of these structures the ureter promptly filled out at the point of constriction, and five years later the child's development is normal, as is the urine. She is living by the kidney previously obstructed by the anomalous vessels, ureteronephrectomy for advanced ureteropyonephrosis having been necessary on the opposite side. Howze's [12] patient, aged 1 year, had a similar condition; ureteronephrectomy was required.

In cases of aberrant vessel obstruction, nephrectomy is indicated when the kidney is not worth saving. If a conservative operation is permissible, obstructing veins may be freely cut. An obstructing artery that supplies not more than a fourth of the kidney may be severed. Cyanosis or blanching of the parenchyma following compression of the anomalous vein or artery will indicate the vascular distribution. If the artery cannot be sacrificed, elevation of the kidney, plastic manipulation of the pelvis, or ureteropyeloneostomy to circumvent the vessel will be required to relieve the pressure on the ureter. Sometimes free mobilization of the ureter and the constricting vessel with high suspension of the kidney suffices. In thirteen children with vascular obstruction of the ureter operated on by me, resection of the vessels only was done in two, vascular resection and nephropexy in two, and nephrectomy for advanced renal destruction in nine. The youngest was 14 months of age.

Other Anomalies.—Ureteral diverticulum is extremely rare. In Rathbun's [13] patient, a 10 year old boy, ureteral diverticula adjacent to the bladder were bilateral. The sacs were excised and the ureters were reimplanted into the bladder. Spiral twists or torsion of the ureter are not amenable to surgical treatment. Only future studies will demonstrate whether sympathectomy will be of value in the treatment of congenital dilatation of the upper urinary tract.

Ureteral valves are common in the new-born but almost always disappear by the end of the first year. The lesion has never been recognized in time to render nephrectomy unnecessary. Should the lesion be recognized, excision of the mucosal fold through the opened ureter is indicated. When the ureter opens into a vesical diverticulum, diverticulectomy with transplantation of the ureter to the bladder is indicated unless, by a plastic maneuver, the floor of the diverticulum surrounding the ureteral orifice can be brought in to form part of the bladder wall. The last method was successful in a 5 year old boy, and ureteroneocystostomy following diverticulectomy was remarkably satisfactory in boys of 4 and 14 years.

SUMMARY

Although the natural recuperative powers of the kidneys in the young favors conservative surgical procedures, delayed diagnosis of the commoner anomalies of the upper urinary tract too often renders nephrectomy necessary. With (1) attention to preoperative preparation, (2) conservation of the body heat, rigid hemostasis and a minimum of surgical trauma during operation, and (3) considerate postoperative care, the youngest patients may successfully and relatively uneventfully be carried through radical surgical attack on the upper urinary tract (table 1).

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9. Schwyzer, Arnold, quoted by Foley, F. E. B., in discussion on Beer, Edwin: Further Experience with Aseptic Nephro-Ureterectomy, J. Urol. **29**: 148 (Feb.) 1933.
10. Campbell, M. F.: Ureteral Obstruction in Juveniles, Am. J. Surg. **5**: 445 (Nov.) 1928.
11. Campbell, M. F.: Vascular Obstruction of the Ureter in Juveniles, Am. J. Surg. **22**: 527 (Dec.) 1933.
12. Howze, C. H.: Personal communication to the author.
13. Rathbun, N. P.: Diverticulum of the Ureter, J. Urol. **17**: 329 (March) 1927.

ECTOPIC PELVIC KIDNEY

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MINNEAPOLIS

An ectopic kidney is one that is congenitally displaced and has never occupied a normal position. An ectopic pelvic kidney is one that is fixed within the bony pelvis or across the spine and derives its blood supply from the adjoining large vessels, such as the iliac arteries.

EMBRYOLOGY

If one examines the embryo when the kidneys and ureters first make their appearance, one will find the axis of the kidney perpendicular and the pelvis anterior. Shortly thereafter, the kidney and its pelvis begin to rotate mesially and the upper pole turns laterally. When the axis remains at an angle or turns horizontally across the embryo, a horseshoe kidney may develop. Normally, at about eight weeks the kidney reaches the relative position it will occupy at birth and is usually covered with the adrenal gland above with the sex gland below. Our study of the embryology indicates that the development of an ectopic pelvic kidney must occur before the eighth week, because at approximately this time the normal developing kidney obtains its permanent blood supply, which is from vessels well up on the aorta, while the permanent blood supply of the pelvic ectopic kidney is from one to ten primitive vessels usually arising from the iliac arteries.

THE INCIDENCE OF ECTOPIC KIDNEY

Dorland[1] in 1911 published a review of the literature together with descriptions of and comments on cases of ectopic kidney that he had observed. Before 1890 he found few reports of pelvic ectopic kidneys in the literature or in discussions of surgical conditions. During this period this anomaly was infrequently recognized before operation or autopsy, because cystoscopic examinations were not common. With the increasing use of cystoscopy after 1890 the reports of ectopic kidneys were more frequent. The incidence of congenital anomalies of the whole genito-urinary tract before 1897 was one specimen in 1,500 autopsies, while the incidence of ectopic kidney was four specimens in 6,536 autopsies.

In 1910 one ectopic kidney specimen was obtained from 882 autopsies.

In 1923 Stewart and Lodge[2] reported three pelvic kidney specimens from 6,500 autopsies, an incidence of one in 2,166.

In 1930 Meredith Campbell,[3] who published a complete survey of this condition, collected reports of 47,477 autopsies, among which there were seventy-two ectopic kidney specimens, an incidence of 1:660.

In our series of 22,000 autopsy reports[4] obtained from the Pathological Department of the University of Minnesota Medical School, from the University Hospital, Glen Lake Sanatorium, and from our private practice, we found twenty-two ectopic kidneys, an incidence of 1:1,000. Seven of these were pelvic, three were lying across the brim of the pelvis proper and the remainder were in the lower iliac fossa.[5]

During 3,285 urologic examinations made over a six year period we were able to find six ectopic kidneys, an incidence of one in 547.

In 1924 Darner,[6] in a review of the literature, reported the finding of sixteen bilateral ectopic kidneys, none of which were fused, which is unusual. Another tabulation of 331 ectopic kidney specimens found at autopsy revealed that 6.3 per cent were bilateral, 24.4 per cent on the right side and 69.2 per cent on the left side. Bilateral ectopic pelvic kidney occurs infrequently. Bugbee[7] found reports of twenty-three cases of single ectopic kidney; two of these were infected.

An examination of clinical reports reveals that, among 594 operations made on kidneys and ureters, three ectopic kidneys were found.

Our complete review of the cases reported in the literature, both from the autopsy room and from clinical observations, shows that the incidence of pelvic kidney is frequent enough to demand clinical consideration. Many of the early cases that were recognized before autopsy were pelvic kidneys that interfered with pregnancy and later became a menace, requiring surgical removal so that normal delivery might occur.

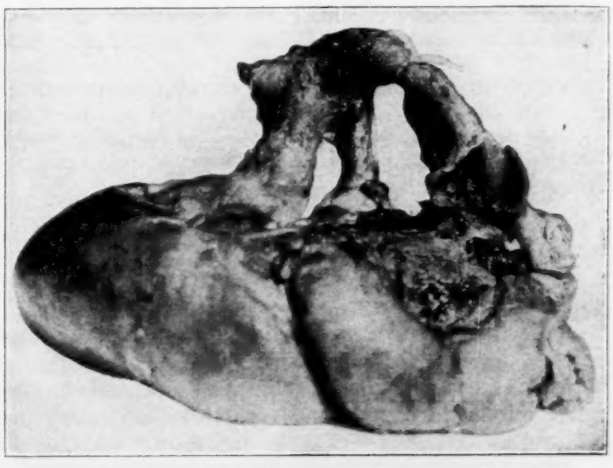

Fig. 1.—An ectopic pelvic kidney recently removed with three extrarenal pelves, which join to form one ureter.

The perfection of the cystoscope, improvement in ureteral catheters, and more recently the use of intravenous urography have increased the incidence of ectopic pelvic kidney. We believe that this condition should be thought of and sought for by every urologist during routine urologic examinations.

ANOMALIES OF POSITION AND COMPLICATIONS

The ectopic kidney may be displaced so that it occupies the chest cavity, and it may herniate through the inguinal canal. An ectopic kidney may be associated with hypertrophy of the prostate, with the resulting complications of this distressing condition. The appendix is frequently removed to relieve pain produced by ectopic pelvic kidney. We found one report of a cystic ectopic pelvic kidney in a 14 months old child. This tumor was just back of the symphysis and could be palpated, but the tumor itself was retroperitoneal. Hypernephromas may occur, and some writers have reported tuberculosis in pelvic kidneys.

Read before the Section on Urology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Dorland, W. A. N.: Surg., Gynec. & Obst. **13**: 303-319, 1911.
2. Stewart, M. J., and Lodge, S. D.: Brit. J. Surg. **11**: 27 (July) 1923.
3. Campbell, M. F.: J. Urol. **24**: 187-198 (Aug.) 1930.
4. Bell, E. T.: Personal communication to the authors.
5. A more detailed report of these kidneys will be published by Dr. E. T. Bell, head of the Department of Pathology, University of Minnesota Medical School.
6. Darner, H. L.: J. Urol. **12**: 193-214 (Sept.) 1924.
7. Bugbee, H. G., and Losee, J. P.: Surg., Gynec. & Obst. **28**: 97 (Feb.) 1919.

As already stated, many normal pregnancies have been complicated by pelvic ectopic kidney. One report of twenty-eight labors contained two maternal and five fetal deaths. Abortions occur very frequently as a result of ectopic pelvic kidneys that are mistaken for cysts of the ovary or some other condition in the female genitalia.

DIAGNOSIS

The diagnosis of ectopic pelvic kidney is not difficult, though comparatively few cases were discovered before operation or autopsy. Recent clinical reports indicate that this condition is being discovered more often than previously. The pyelo-ureterogram by either the retrograde or the excretion method will clinch the diagnosis. When indications are present for urologic study, both kidneys and both ureters should always be catheterized. Urine specimens should be obtained from both sides and bilateral ureteropyelograms are always indicated.

Incidence of Ectopic Kidneys Following Autopsy and in the Authors' Clinical Experience.

Year	Reported by	Ectopic Kidneys	Autopsies
1872-1882	Guy's Hospital	5	4,632
1873-1897	Morris	4	6,536
1897-1930	Meredith Campbell	72	47,477
1923	Stewart and Lodge	3	6,500
1935	Bell	22	22,000
Total		106	87,145
Incidence, 1:822 autopsies			
			Urologic Examinations
6-yr. period	Authors	6	3,285
Incidence, 1:547 urologic examinations			

With this technic, we feel more congenital ectopic pelvic kidneys will be discovered. The difference between the incidence of clinical cases and autopsy reports indicates that many ectopic kidneys may produce no symptoms and, therefore, are never discovered. In one of Judd's [8] reports, of nineteen pelvic kidneys only ten required surgery. The others were discovered during operation for other conditions and produced no symptoms that required relief by surgical means. In the cases of ectopic pelvic kidney that we have observed there were urinary symptoms that were referable to the condition present.

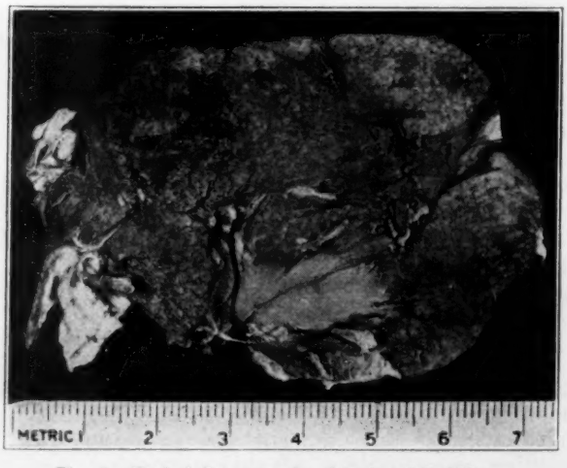

Fig. 2.—Typical flat, pan-cake shaped, pelvic kidney.

8. Judd, E. S., and Harrington, S. W.: Collected Papers of the Mayo Clinic **10**: 257-268, 1918.

TREATMENT AND OPERATIVE PROCEDURE

The treatment of this condition is nephrectomy if a good kidney is present on the other side. The symptoms are due to interference with drainage from the kidney, which produces a hydro-ureter and hydronephrosis, later with infection. Calculi may be present in the renal pelvis or ureter. As mentioned, a number of these cases do not require surgery, since the drainage seems to be adequate and infection has not occurred.

Fig. 3.—Section of the same kidney.

There is no reason why a kidney that is fixed in the pelvis and functioning normally should be removed unless it is interfering with the growth or function of other organs.

When an ectopic kidney appears above the crest of the ilium, it is sometimes possible to anchor it in its usual position so that interference with drainage from the pelvis and through the ureters may be corrected. This is impossible with a pelvic ectopic kidney, because the blood supply that comes from the iliac vessels or from vessels in the pelvis will prevent the replacement of the kidney in a normal position.

We have had the opportunity of examining and operating on six ectopic pelvic kidneys. The simplest method of approach, in our opinion, is extraperitoneal. The position of the kidney and the large number of blood vessels that are frequently found make the transperitoneal approach undesirable. An incision may be made laterally through the abdominal wall and the peritoneum reflected inward. In our experience, the exposure of the ureters and the numerous vessels is comparatively easy and the nephrectomy not difficult. These kidneys, when removed, are congenitally deformed and are shaped like a pancake. The renal pelvis is usually anterior, though it may be inferior. In one of our cases there were six calices, and in one instance the pelvis seemed to be divided from the upper to the lower pole of the kidney.

CONCLUSIONS

1. An ectopic kidney is one that is congenitally displaced and has never occupied a normal position. An ectopic pelvic kidney is one that is fixed within the bony pelvis or across the spine and derives its blood supply from the adjoining large vessels and the iliac arteries.

2. Ectopic pelvic kidney is a defect of embryologic development and occurs before the eighth week.

3. The incidence in congenital ectopic kidney is one in 822 autopsies, and one in 547 urologic examinations.

4. Ectopic pelvic kidney must be considered when pelvic tumors are found in both sexes, and in the female when abortions occur or when normal pregnancies are interfered with by some abdominal or pelvic mass.

5. The diagnosis requires cystoscopy, ureteral catheterization, and bilateral pyelo-ureterograms.

6. Congenital ectopic pelvic kidney may be symptomless.

7. Treatment consists of nephrectomy if symptoms are produced by the ectopic kidney, provided the contralateral kidney is normal. If no symptoms are produced, if drainage is good and if no infection is present, nephrectomy is not indicated. The extraperitoneal approach is satisfactory and safe.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. GUTIERREZ, HAWTHORNE, CAMPBELL, AND THOMAS AND BARTON

DR. VINCENT J. O'CONOR, Chicago: The more universal adoption of routine urologic examinations has brought out the fact that the anomalies of the upper urinary tract are not only common but often the underlying cause of obstruction and infection. Congenital solitary kidney that is the seat of stone, hydronephrosis or infection is not infrequently a clinical problem. Experience has shown that corrective conservative operations on these kidneys may be safely carried out with an operative mortality of no greater degree than the extent of renal destruction would warrant in the case of both kidneys being present. Nephropexy and nephrolysis is a valuable procedure in some of these cases. During the past year I have encountered complete postrenal anuria in three patients with impacted stone in the upper ureter of a congenital solitary kidney. All made uneventful convalescence after ureterolithotomy. In surgery of the solitary kidney it is important to minimize the operative trauma and to provide free urinary drainage, and often it is advisable to decapsulate the kidney. I have encountered unilateral pelvic ectopia of the right kidney in three women and two men. All were hydronephrotic kidneys and the patients had had a prior appendectomy without relief of pain. In two cases dystocia was a prominent feature. In one of these patients a cesarean section had to be performed and six months later I removed a large hydronephrotic kidney from the hollow of the sacrum because of persistent pelvic pain. Urography is the only accurate preoperative method of establishing the diagnosis of ectopia. The double ureter, either complete or incomplete, is the most frequent anomaly seen clinically. My records show thirty-two incomplete and nine complete duplications of the ureter. Two of the complete duplications were bilateral with four ureteral orifices in the bladder. In my experience the pathologic changes have been located in the lower segment of the kidney in about 90 per cent. The upper half does not seem to be subjected to the obstructive lesions as does the lower half. Heminephrectomy is an established surgical procedure in these cases when the diseased portion is accompanied by a good functioning fellow half. I have performed this operation nine times without complication. Complete excision of the ureter, if it is incompletely duplicated, must accompany heminephrectomy. If complete, the ureter may be treated as in ordinary nephrectomy. Excretion urography has been a great aid in many of these cases, but ureteral catheterization and retrograde pyelography are necessary to complete the diagnosis in most instances. Dr. Campbell's high proportion of anomalies present in infants with persistent pyuria emphasizes the necessity for careful complete urologic examination.

DR. WILLIAM P. HERBST, Washington, D. C.: In aplasia of the renal parenchyma, one must always be sure before one removes a kidney that there is a good kidney on the other side. Just because there happen to be ureteral orifices in the bladder does not necessarily mean that there is a functioning kidney. I had one instance recently in which there was a relatively aplastic nubbin-like kidney that had previously been treated for pyelonephritis without the diagnosis being made. Dr. Campbell's paper demonstrates the fact that he has had unusual opportunity of doing a great amount of work on children. He highly recommends the Deming nephropexy, and in his hands it unquestionably works well because he has satisfactory results. I myself have been hesitant to use that particular type because I feel that, when one makes a hammock under the kidney one automatically makes the hazard of having the kidney fall over an angulated ureter and produce obstruction. His plastic work at the ureteropelvic juncture has been comprehensive, but there is one very important consideration that should not be lost sight of, which is that the tissues must be good. In attempting to do plastic work on pelvic and ureteral tissue that is nothing but scar tissue one is bound to end with failure. His method of decompression of large collections of fluid is one of the most valuable suggestions that have been offered for some time, and his utilization of this method is particularly valuable in children. Children do not always withstand surgical operations satisfactorily, particularly in the first twenty-four or forty-eight hours, and with the very careful handling of his young patients he has unquestionably been more successful with them than he would have been had he not taken unusual precautions. The extraperitoneal approach of Drs. Thomas and Barton in the handling of ectopic kidneys is very valuable, although opinion seems to be divided. Some advise the transperitoneal and some the extraperitoneal approach. Unquestionably, in their hands, the extraperitoneal has been very satisfactory and certainly recommends itself because one may stay out of the peritoneal cavity. Their one picture showed what appeared to be a very markedly dilated hydronephrotic kidney and hydro-ureter with intravenous urography, but with retrograde urography it was demonstrated to be an ectopic kidney with a ureter entirely different from the original impression. The work of Dr. Hawthorne gives a comprehensive insight into the etiology of these anomalies. His attitude on the handling of these double kidneys, when he says that he doesn't do heminephrectomy, I think will possibly be revised in the future, because of the practical importance of saving good tissue.

DR. MOSES SWICK, New York: Excretion urography is invaluable in the presence of obstructive lesions of congenital origin, or of lesions either obstructive or infectious superimposed on congenitally anomalous conditions, under which circumstances cystoscopy and retrograde pyelography may be mechanically impossible or dangerous. It is especially well adapted to cases presenting obscure abdominal symptoms and conditions in which one is adverse to or hesitates to subject a patient to the retrograde route of investigation. For example, the differentiation of abdominal masses, whether of intra-urinary or extra-urinary origin, has been frequently facilitated by this method of approach. In this fashion the recognition of congenital solitary kidney, ectopic fused kidney and dystopia of the kidney has been most important to the internist, the surgeon and the urologist. Children in whom pyuria has usually been attributed to pyelitis have been found to be suffering from infections superimposed on congenital lesions, particularly the infected congenital hydronephroses. Concerning the latter, it is important to bear in mind that, despite comparatively little intact renal tissue, good visualization may often be encountered and that therefore intense roentgen shadows are no quantitative criterion nor one determining the type of therapeutic procedure. The latter will depend on the functional anatomic status of the individual case and the operative observations. In nonfunctioning hydronephrosis, the mere nonvisualization of a conducting system incidental to the functional anatomic derangement of the kidney parenchyma is in itself of great assistance as a means of localization and of diagnosis, when considered together with the other clinical data. In kidney reduplication, the visualization of one kidney pelvis stunted in its appearance and the failure to account for the other should suggest the presence of a double kidney and call for cystopyelographic investigation. The success of visualization in polycystic kidney disease will depend on the degree of renal decompensation. I do not mean to relegate retrograde pyelography to a minor rôle in the diagnosis of congenital anomalies. However, the less taxing and simpler method of excretion urography should be employed first, both for diagnosis and as a survey study. When corroborative or supplementary evidence is necessary, or when the results by

excretion urography are equivocal, retrograde pyelography may be resorted to, when the latter will be less time consuming and easier for the patient, some data on the status of the urinary tracts already having been acquired.

DR. LOUIS H. SEGAR, Indianapolis: In Dr. Campbell's discussion, from the pediatrician's standpoint I think that three things should be noted. We pediatricians have come to have a urologic point of view; we have come to realize that the baby who, having a chronic pyuria, does not respond in a reasonable length of time to medical treatment deserves a complete urologic examination. On the other hand, we are confronted with difficulties that consist in the selection of a complete urologist, because I believe that it is necessary in the conduct of such urologic cases in childhood to select a urologist who by training has perfected himself in the technic of the investigation of these patients. Not every urologist has acquired a competence that makes him a valuable assistant to the pediatrician in the conduct of these cases. I think that the urologist must acquire the pediatric point of view concerning things urologic in babies —in particular that what seems to be a dead kidney in a baby isn't always a dead kidney, that the regenerative and recuperative possibilities in the baby's anatomy are perhaps greater than those in the adult, and that what seems to be a surgical kidney in a baby is capable in some instances of sufficient regeneration and recuperation to make nephrectomy an unnecessarily radical procedure. The contribution of the ketogenic diet as a postoperative medical procedure is of decided value. After the surgical correction of some of these anomalies one is still confronted with the necessity of sterilizing the urinary tract, and the ketogenic diet is certainly a definite contribution toward that end. To institute a ketogenic diet for this particular purpose, one must institute a diet in which the ratio of fat to combined carbohydrate-protein is at least 4:1 and in some instances 5:1 and thereby obtain a beta-oxybutyric acid concentration of at least 0.5 per cent and a p_H in the urine of somewhere around 5.5. When this is done, some of these very resistant urinary infections can at times be cleared up.

DR. REED M. NESBIT, Ann Arbor, Mich.: I have seen a child who nine years ago was unable to void any urine. There was an enormous mass suprapubically. Catheterization of the bladder gave no urine, and suprapubic operation was done, at which time I found a kidney in the pelvis containing 1,500 cc. of fluid. Exploration of the upper part of the abdomen revealed no kidney on the opposite side. This was confirmed later by intravenous pyelography. He was kept on suprapubic nephrostomy drainage for a considerable period. A pyelogram was made by injecting the dye through the nephrostomy tube three and a half years after the operation on the kidney. The kidney had reduced very considerably. At the present time the boy is 17 years of age and I am now contemplating a fusion of the pelvis of the kidney with the bladder.

DR. C. H. DET. SHIVERS, Atlantic City, N. J.: I was interested in what Dr. Thomas had to say about the ectopic pelvic kidney. We have had two such cases in the last six years at the Atlantic City Hospital. One, a young man referred to the surgical service with the diagnosis of acute appendix, underwent an emergency operation by one of our general surgeons, who found on opening the peritoneal cavity that the appendix was normal but noticed that there was a retroperitoneal mass in the pelvis, which, when exposed, was found to be a cystic kidney. Investigation was made to assure the surgeon of a grossly normal kidney on the opposite side before a nephrectomy was done. The other patient was a woman, aged 32, referred to my service complaining of pain in the lower left part of the abdomen, which had persisted off and on since her first pregnancy. Previous examinations had been made by a gynecologist, who suspected that there might be some anomaly of the urinary tract. After a cystoscopic and roentgen study the right kidney was found in normal position with an infantile type of pelvis but showing a normal excretion of dye. On the left side the catheter could not be introduced beyond a point corresponding to the fourth lumbar vertebra. A retrograde pyelogram showed no injection in the left renal pelvis. The upper pole of the left kidney, in the Trendelenburg position, came to the lower border of the fourth lumbar vertebra. The dye output was deficient. Owing to the persistent symptoms, I decided to explore the kidney. An extraperitoneal approach was made and the kidney was found in the bony pelvis. The ureter was so short that I was unable to elevate the lower pole of the kidney above the crest of the ilium. Nephrectomy was decided on. The patient made an uneventful recovery and has been entirely relieved of all her symptoms. The pregnant uterus was probably a predisposing factor in producing the clinical symptoms by interfering with renal circulation and by traumatism. The kidney on exposure was grossly normal. On section there was practically no extrarenal portion of the pelvis. Microscopic sections showed a diffuse, and in places a marked fibrosis, a well marked glomerular hyalinization, glomerular congestion and diffuse epithelial degeneration of the tubules.

DR. GEORGE R. LIVERMORE, Memphis, Tenn.: I wish to confirm that fatal shock sometimes results when a large infected hydronephrosis is suddenly emptied. I had a case in a woman, aged 45, who had a large calculous pyonephrosis and perinephric abscess. Her nonprotein nitrogen and creatinine were high, she had rigors, fever and sweats and, although she was in very poor condition, it was felt that drainage was imperative. When the abscess was incised, the pus escaped under great pressure and, although a piece of gauze was immediately pressed against the incision to prevent the too rapid evacuation of the pus, the patient went into shock and died within a few minutes despite all restorative measures. In regard to urologic procedures in children, we should all make an effort to educate the general practitioner and the pediatrician to the fact that congenital anomalies are of frequent occurrence and that children are subject to the same urologic conditions that affect the adult, with the exception of hypertrophy of the prostate and pyelonephritis of pregnancy, and hence should be given the benefit of a urologic study before their urinary tract is destroyed. Even young children stand urologic surgery better than adults. Recently a child, aged 1 year, was brought to me, who at the age of 2 months had been diagnosed as having pyelitis and had been treated with methenamine and a ketogenic diet. I found a large hydronephrosis due to a stricture at the ureteropelvic junction and an S-shaped kink at this point. The child was subjected to nephrectomy and behaved as though no operation had been done.

DR. JOHN K. ORMOND, Detroit: A patient came with all the symptoms of stone in the ureter. A plain roentgenogram showed what looked like two stones, one in the kidney and one in the ureter. Intravenous pyelography revealed both pelves filled up with some of the fluid. The ureters showed an ectopic kidney with a stone in each pelvis, that is, crossed ectopia with fusion. It was possible to remove the two stones through the same kidney incision.

DR. ROBERT GUTIERREZ, New York: From this symposium it is to be concluded that anomalies of the upper urinary tract in our modern urographic days are common and that every patient with the slightest urinary symptoms or the slightest complaint of abdominal discomfort or undetermined abdominal condition is entitled to a complete urologic and urographic examination before any surgical intervention is to be considered. I think that in many of these cases of anomalies of the upper urinary tract the intravenous urograms are not sufficient for a correct diagnosis and in many instances are confusing in the visualization or interpretation. As a rule, such kidneys are chronically inflamed or suffering from lack of function, chronic nephritis or chronic pyelitis and therefore eliminate the opaque substance poorly. It is my impression that many of these cases could be much more accurately diagnosed by the routine complete urologic examination with cystoscopy, catheterization of the ureters and bilateral pyelograms. The treatment or the surgical procedure to be instituted depends on the individual case. Many of these anomalies have practically no clinical symptoms; they may be considered silent. On the other hand, I have seen many cases of complete functionless hydronephrosis with hydro-ureter; also cases of ectopic and fused kidney in which operation for abdominal conditions has been performed without relief, when in reality the underlying cause of the unsuspected condition was an established urologic lesion. So it is of vital importance that a correct preoperative diagnosis be made in order to determine the proper surgical treatment and assure an accurate prognosis. In horseshoe

kidney disease the division of the isthmus of the kidney followed by nephropexy, nephrolysis and ureterolysis is the most appropriate treatment, even in cases without any associated pathologic changes visualized in an ordinary pyelogram but in which the patient has been suffering from the horseshoe kidney syndrome of abdominal pains, chronic constipation and intermittent urinary disturbances. In cases of renal ectopia, when the kidney is on the promontory of the sacrum in the middle line between the bladder and the rectum, it is advisable to operate transperitoneally and do a nephrectomy instead of any conservative procedure, provided the opposite kidney has enough function to stand the operation; if the ectopia is lateral, an extraperitoneal exposure is more advantageous.

DR. ALLEN B. HAWTHORNE, Montreal: It is evident that congenital anomalies are being more easily recognized these days. With regard to Dr. Herbst's remark about the heminephrectomy, I am not opposed to heminephrectomy but am simply waiting for a case in which I think this procedure is suitable.

DR. GILBERT J. THOMAS, Minneapolis: I was going to ask Dr. Campbell to discuss two congenital conditions in children that have not yet been mentioned. Dr. John Caulk recently has advised the resection of obstruction of the neck of the bladder in both male and female children for the control of residual urine. This is done for the improvement in function of the bladder and also, in some instances, for the relief of ureteral dilatation or backing up of urine through the ureter into the kidney pelvis. The other condition that I think should be mentioned is what I like to call atony of the ureter or congenital idiopathic dilatation of the ureter. Here there is a congenital defect in the development of the ureteral wall with no demonstrable obstruction either at the neck of the bladder or at the junction of the ureter with the bladder. It has been my experience that surgical intervention by attempting to dilate the ureter at the junction of the bladder or by plastic surgery at the ureteropelvic juncture has not been satisfactory. Congenital conditions in the urologic tract in children are now receiving the recognition that they should have, and, if we will listen to and cooperate with our pediatric friends and always be sure that we have the ability to examine these children and have the proper instruments for developing our technic, we are going to find many congenital conditions that have been overlooked.

DR. MEREDITH F. CAMPBELL, New York: Infravesical obstructions did not fall within the scope of my paper; therefore I said nothing about them. If the obstruction at the vesical outlet is relieved, essentially all has been done that is necessary to do unless subsequent investigation indicates that permanent secondary kinks have been established in the upper urinary tract and cause urinary retention. In the cases of vesical outlet obstruction that I have encountered—congenital valves of the posterior urethra, congenital contracture of the bladder neck, cord bladder of the spastic or atonic type—I have been content to relieve the obstruction at the vesical outlet as far as possible. In none of these cases have I attempted secondary operations on the upper urinary tract. As to the atonic ureter, I don't know how one can identify it as a lesion distinct from cord bladder. In the cases of atonic ureter that I have seen, cord bladder coexisted. In other words, the two conditions were part of the same process. Moreover, in a great many cases of cord bladder the alterations in the upper urinary tract, suggesting the diagnosis of atonic ureter, are purely back-pressure changes.

The Fourth Ventricle.—The fourth ventricle is a midline cavity situated rostral to the cerebellum and caudal to the pons and dorsal portion of the medulla oblongata. It is connected dorsally with the third ventricle by means of the aqueduct of Sylvius, ventrally with the central canal of the medulla oblongata, caudally and laterally with the cisterna magna by the foramina of Magendie and Luschka respectively.—Davidoff, L. M., and Dyke, C. G.: The Demonstration of Normal Cerebral Structures by Means of Encephalography: V. The Ventricles, Interventricular Foramina, and Aqueduct of Sylvius, *Bull. Neurol. Inst. New York* **4**:91 (March) 1935.

FEVER THERAPY OF MYCOSIS FUNGOIDES

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Occasional cases of spontaneous regression of malignant tumors have been reported following attacks of acute infectious disease. In line with these observations, cases of mycosis fungoides, which disease in its later stage assumes the character of a malignant neoplasm, have been reported improved, indeed cured, following attacks of an acute febrile condition.

From published reports [1] of spontaneous regression of neoplasms it appears that such regression has occurred following incomplete surgical removal of the tumor, during acute febrile processes and following the application of heat, frequently in connection with some profound alteration in the metabolic processes of the organism, such as cachexia, artificial menopause or the puerperium. Of these circumstances, acute systemic infection is pertinent to this presentation. The majority of cases of spontaneous regression of neoplasms following an acute infection have occurred after an attack of erysipelas.[2] Such regressions have also occurred after smallpox, pneumonia, malaria and acute tuberculosis. In these cases a uniform symptom was a high fever sustained without remission for several days. In Rohdenburg's study [1] of conditions that can bring about regressive changes in malignant tumors, he ascribed heat as the most efficacious, applied from without or occuring under the limited conditions of long duration and comparatively low degree.

INFLUENCE OF ACUTE INFECTIOUS DISEASE ON MYCOSIS FUNGOIDES

Bazin [3] in 1862 apparently was the first to report the favorable influence of an acute infection on mycosis fungoides. His patient was a man, aged 60, who presented a number of tumors of mycosis fungoides. During an attack of erysipelas the tumors began to decrease in size and disappeared in the course of eight days. Their ulcerative remains healed in the course of several months. Ten years later [4] the patient had had no recurrence of mycosis fungoides.

The case reported by McVail, Murray and Atkinson [5] presented unusually large tumors of mycosis fungoides,

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1. Tillmanns, Hermann: Erysipelas, in Billroth and Luecke: Deutsche Chirurgie, part 5, Stuttgart, F. Enke, 1880. Weichel, H.: Zur Casuistik der Wirkung des Erysipels auf bösartige Geschwülste, Inaug. Dissertation, Berlin, G. Schade, 1889. Mohr, H.: Ueber spontane Heilungsvorgänge beim Karzinom, Therap. Monatsh. **17**: 553 and 617, 1903. Rohdenburg, G. L.: Fluctuations in the Growth Energy of Malignant Tumors in Man, with Especial Reference to Spontaneous Recession, J. Cancer Research **3**: 193 (April) 1918.

2. According to Tillmanns,[1] the curative effect of erysipelas in skin diseases was known in the early eighteenth century. Ricord and Depres observed its favorable influence on syphilitic lesions, and Busch in 1866 is said to have recorded first its beneficial effect on cancer and employed first erysipelas as a therapeutic agent. Attempts were made to infect patients having cancer with erysipelas by placing them in a bed recently occupied by a patient with erysipelas. After Fehleisen in 1881 isolated the streptococci of erysipelas, cancer patients were inoculated with cultures of the organism. Later vaccines of the organism were employed in treatment of inoperable malignant neoplasms and still later erysipelas and prodigiosus toxins. It is interesting to note the following excerpts from Weichel,[1] written in 1889: "It is evident that bacteriotherapy promises great success for the future. Further observations and congruent experiences may suggest indications to justify the daring use of inoculation erysipelas proposed by Fehleisen in treatment of malignant tumors."

3. Bazin, P. A. E.: Leçons théoriques et cliniques sur les affections cutanées artificielles, Paris, A. Delahaye, 1862.

4. Bazin, P. A. E.: Mycosis Fungoides in Diction, in Encyclopédie des sciences médicales, Paris, Masson & Cie **11**: 192, 1878.

5. McVail, C.; Murray, W. D., and Atkinson, D. M.: Case of Granuloma Fungoides, Glasgow Hosp. Rep. **1**: 53, 1898.

which greatly diminished within four days of the onset of an acute systemic infection. The temperature for eight days ranged from 100 to 105.6 F. For a few months following the infection the course of the disease was favorably influenced. There was a relapse, however, which caused death five months following the onset of the systemic infection.

Crocker [6] comments as follows on the favorable influence of systemic infection on mycosis fungoides: "Thus one of my patients was almost cured, and, of course, almost killed, by an attack of double pneumonia. Another improved very much during a malarial febrile attack, and erysipelas has quite cured one case."

Galloway and MacLeod [7] report the case of a woman in the erythematous stage of mycosis fungoides. During and subsequent to an attack of influenza "the progress of the disease seemed to be arrested, the

Fig. 1 (case 1).—Mycosis fungoides: Appearance four months before malarial therapy. There was a generalized eruption of erythematous, scaly areas, infiltrated plaques and elevated lesions assuming tumor size.

pruritus diminished, the scaliness disappeared, and the erythrodermia became less vivid." Three months after influenza the disease relapsed, at which time a total of ten injections of Coley's serum was administered. These injections caused a retrogression of some of the lesions. The final outcome is not reported.

MacCormac [8] reports two cases of mycosis fungoides illustrating the beneficial effect of an attack of erysipelas. One patient is reported alive at the age of 59, seventeen years after mycosis fungoides appeared in the tumor stage and twelve years after an attack of erysiplas. Before erysipelas the patient was gravely ill; it appeared that she would soon die of mycosis fungoides. Roentgen therapy was no longer effective. After erysipelas the lesions disappeared. The result is described as dramatic and surprising. The patient was observed by MacCormac for thirteen years after erysipelas, and except for a few lesions of mycosis fungoides the disease remained stationary and quiescent. MacCormac justifiably comments on the rarity of a patient surviving for seventeen years after the tumor stage of mycosis fungoides. The second patient was in the tumor stage of the disease, with ulceration of some of the tumors. Despite roentgen therapy the disease was progressing. Following an attack of erysipelas some of the tumors disappeared; others were flattened and no longer tumefied.

In contrast to the foregoing reports, it should be noted that Kaposi [9] reported a case of mycosis fungoides in which an attack of erysipelas failed to exert a beneficial effect on the disease. He mentioned a similar observation of Vidal. In Gray's [10] case of mycosis fungoides an attack of erysipelas appeared to aggravate the disease.

NONSPECIFIC PROTEIN THERAPY OF MYCOSIS FUNGOIDES

Injections with a variety of nonspecific proteins have been employed in the treatment of mycosis fungoides Older reports concern the use of vaccines of Streptococcus erysipelatis and erysipelas and prodigiosus toxins (Coley). Recent reports concern intravenous injections of a variety of vaccines to produce fever and constitutional reaction constituting nonspecific protein therapy.

Fordyce [11] treated a patient with intravenous injections of typhoid and paratyphoid vaccines. There was complete relief from itching, with disappearance of some of the lesions. However, the patient died of mycosis fungoides about one year after treatment.[12] Wills and Hadfield [13] employed Bacillus coli vaccines. After the fifth injection the lesions disappeared, the patient remaining free from the eruption for one year, at which time there was a relapse. Cannon [12] as well as MacCormac [14] employed nonspecific protein therapy in a number of cases of mycosis fungoides. Their results with this treatment were not satisfactory.

MALARIAL AND FEVER THERAPY OF FUNGOIDES

Motivated by the favorable influence of an acute infectious disease on mycosis fungoides, I employed malaria in the treatment of a patient with mycosis fungoides (case 1) and produced fever in another patient by means of the Kettering hypertherm (case 2). Subsequent to the employment of these methods of treatment I have been informed by O'Leary [15] of the Mayo Clinic and by MacCormac of London of their use of inoculation malaria in the treatment of mycosis fungoides. O'Leary treated two patients. One was in the tumor stage of the disease. After treatment all the lesions disappeared except one tumor, which was excised. The patient remained free from the disease for one year, at which time he died suddenly of an unknown cause.

6. Crocker, H. R.: Diseases of the Skin, Philadelphia, Blakiston's Son & Co., 1903, p. 1055.
7. Galloway, J., and MacLeod, J. M. H.: Mycosis Fungoides: An Examination of Three Cases, Brit. J. Dermat. **12**: 153, 1900.
8. MacCormac, H.: Erysipelas and Mycosis Fungoides, Brit. J. Dermat. & Syph. **45**: 237 (June) 1933.
9. Kaposi, M.: Mycosis fungoides und ihre Beziehungen zu anderen ähnlichen Erkrankungsformen, Wien. med. Wchnschr. **37**: 596 and 723, 1887.
10. Gray, A. M. H.: Case Presentation, Royal Society of Medicine, Section on Dermatology, Brit. J. Dermat. **46**: 498 (Dec.) 1934.
11. Fordyce, John, cited in discussion on case presented by Dr. Zeisler, Chicago Dermatological Society, J. Cutan. Dis. **37**: 263, 1919.
12. Cannon, A. B., former associate of the late Dr. John Fordyce: Personal communication to the author.
13. Wills, W. K., and Hadfield, G.: Mycosis Fungoides, Brit. J. Dermat. **37**: 113 (March) 1925.
14. MacCormac, H.: Personal communication to the author.
15. O'Leary, Paul: Personal communication to the author.

In the other case, after malarial treatment the elevated plaques flattened. Improvement was estimated to be about 50 per cent. This patient died of pneumonia about one year after malarial treatment. O'Leary treated three other patients with fever produced mechanically. It was without effect.

MacCormac [16] employed inoculation malaria in the treatment of a patient in the tumor stage of mycosis

Fig. 2 (case 1).—Appearance six weeks after malarial treatment. Elevated lesions flattened, and many erythematous, scaly patches disappeared.

fungoides after roentgen therapy ceased to be effective. Following malarial treatment the tumors rapidly flattened and almost entirely disappeared. About one year following this report MacCormac wrote me [17] as follows:

Gradually lesions reappeared and although the patient's condition is much better than before the malaria treatment, it has been necessary to x-ray a number of areas at intervals. I saw him on April 3 at Middlesex Hospital and found him generally in good condition except for an infiltrated eczematoid eruption on the legs of a mycotic nature. For some reason, or by some chance, I have had more than my share of patients with mycosis fungoides, and in view of past experience with this disease I feel justified in saying that without the malaria treatment this man would by now be dead. We are now able to keep the disease under by judicious treatment and he is able to carry on his occupation (although not to his full working capacity), which was impossible before malaria therapy was instituted About four months ago I treated with malaria another patient with a large number of small button-sized tumors of mycosis fungoides in addition to one large tumor, and areas of premycotic infiltration. During the period of pyrexia the tumors and mycotic lesions flattened down and almost entirely disappeared. He has, however, not maintained the improvement; the tumors, soon after the malaria pyrexia was stopped, began to develop to their former size and it has been necessary to irradiate with x-rays some of the larger masses which have developed. This second case has, therefore, not been successful; it was nevertheless encouraging, so far as it went, to see that this type of therapy has an effect, and a profound effect, on the disease within limits.

16. MacCormac, H.: Mycosis Fungoides Treated by Malaria, Case Presentation, Royal Society of Medicine, Section on Dermatology, Brit. J. Dermat. **46**: 429 (Oct.) 1934.

17. MacCormac, H.: Personal communication to the author in April 1935.

REPORT OF CASES

CASE 1.—*Mycosis fungoides treated with malaria: History.*—J. H., an American, aged 56, in August 1932 presented a typical picture of mycosis fungoides. Itching first appeared in 1926 about the time of the onset of erythematous, scaly areas on the trunk. The eruption was regarded as eczema, for which a variety of local applications were prescribed without avail by different physicians. In 1928 a tentative diagnosis of the premycotic stage of mycosis fungoides was made at a presentation of the patient at a meeting of the Philadelphia Dermatological Society. In 1930 a dermatologist whom the patient consulted diagnosed mycosis fungoides. Roentgen therapy was administered at intervals for six months. Itching was relieved and the eruption improved. Improvement was maintained for about one year. At the end of this period itching became more pronounced and many new lesions appeared.

Examination.—Scattered over the entire cutaneous surface were variable sized, sharply marginated, brick red, scaly patches; some were infiltrated and a few were elevated. There was considerable itching. The patient was well developed and nourished. The epitrochlear and axillary lymph nodes were moderately enlarged. The liver and spleen were not palpable. The heart and lungs were normal. Complete blood count and smear showed no unusual features.

Course and Treatment.—Solution of potassium arsenite was administered and roentgen therapy—one-half skin unit—was

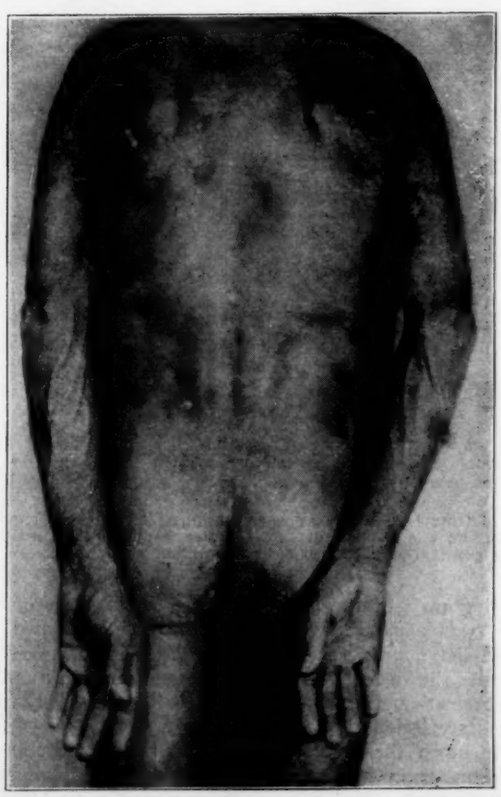

Fig. 3 (case 1).—Ten months after malarial therapy: The skin was clear except for pigmentary remains of former lesions and a few scattered, small, erythematous, scaly areas. Itching was slight.

applied to the most pronounced lesions at intervals of two weeks. The lesions were treated at different times. The disease improved under this therapy until about September 1933, at which time improvement was not maintained. New lesions appeared and older lesions became more pronounced. Roentgen therapy became much less effective. In October 1933 antigen H (typhoid), fifty million to one billion organisms, was injected intravenously every other day for six consecutive injections.

There was a constitutional reaction with fever rise of from 102 to 103 F. No clinical improvement resulted. The patient consented to malaria inoculation. Physical and laboratory examinations disclosed no contraindication to such inoculation. At this time itching was severe and the patient was partly incapacitated. Lesions of the disease involved the scalp, eyebrows, eyelids, face, neck, trunk, perineum and extremities. Such lesions consisted of erythematous, scaly areas and many infiltrated and raised plaques. Some lesions were considerably elevated, assuming tumor size. None were ulcerating. The clinical picture was more pronounced than that shown in figure 1, which shows the eruption in July 1933.

On November 11 6 cc. of blood from a patient with tertian malaria was injected intravenously. The initial febrile reaction occurred November 21 and thereafter every other day. The temperature range was from 103 to 105.6 F. Plasmodia were demonstrated in blood smears. After ten consecutive febrile reactions, quinine was administered. There were no untoward reactions and convalescence was uneventful.

Fig. 4 (case 1).—Patient seventeen months after malaria therapy: The improvement was maintained. There were about twelve flat, scaly lesions. Itching was still present but was not disturbing.

During malaria therapy, improvement of the mycosis fungoides was apparent. Itching was less and elevated lesions became flatter. Subsequent improvement was gradual and is pictorally shown in figures 2, 3 and 4. About six weeks after the termination of malaria all elevated lesions were flat and many scaly lesions had disappeared, itching was less (fig. 2) and roentgen therapy and the administration of solution of potassium arsenite were resumed. About six months after malaria, improvement was considerable; the skin was clear excepting for about one dozen dry, scaly areas and the pigmented remains of former lesions (similar to the condition shown in figure 3). Therapy with roentgen rays and the administration of solution of potassium arsenite was continued. Itching was slight. The patient was in good condition and was working.

In May 1935 the improvement in the patient's condition was generally maintained, excepting for the appearance of a few new flat scaly lesions (fig. 4). Itching was still present but did not disturb sleep. The patient was in good general condition and working steadily.

CASE 2.—*Mycosis fungoides treated with fever therapy: History.*—F. S., a man, aged 53, American, complained of itching confined to the trunk, which was the initial symptom and was soon followed by what he described as a "red, scaly eruption." The onset had occurred two years prior to December 1935, when I saw him. The eruption gradually became generalized. Itching was considerable and continued unabated. He had been hospitalized in the dermatologic wards of two different hospitals. Infected teeth had been removed and gallbladder drainage carried out. A vaccine prepared from secretion obtained by prostatic massage had been administered. He had received what was from his description spinal anesthesia. Sixteen such treatments were given for the relief of itching. This caused temporary cessation of the itching. A variety of local treatments had been employed. Improvement of the eruption and of the itching were only temporary.

Examination.—The patient presented a generalized eruption of erythematous, scaly areas, eczematoid in nature. The involvement was confluent on the extremities, presenting an appearance of erythrodermia. On the trunk were scattered papules, which were discrete and definitely infiltrated. Itching was severe and incapacitated the patient. He was in good general condition; physical examination and laboratory tests, which need not be detailed, showed nothing unusual.

A section of an infiltrated papule disclosed slight hyperkeratosis and acanthosis associated with edema. There was a perivascular infiltration and angioblastic proliferation with some fibroblasts. The appearance suggested a low grade inflammatory reaction. In the upper third of the corium there was a sharply limited cellular infiltration of lymphocytes and a variety of other cells varying in size, shape and staining characteristics. In the epidermis there were the so-called epidermal abscesses of Pautrier.

Dr. Fred Weidman of Philadelphia regarded the section as representative of the early stage of mycosis fungoides.

Course and Treatment.—Local applications appropriate for eczema and roentgen therapy were employed. Following this treatment there was considerable improvement both in the skin condition and in the itching. After a few weeks, however, there was a relapse. In view of the severity of the itching, the persistence of the eruption in spite of treatment, its prompt relapse, the infiltrated papules and the histologic picture, the diagnosis of early mycosis fungoides was justified.

Fever was produced by means of the air-conditioned fever chamber known as the Kettering hypertherm. Treatment started in February 1935 was repeated once and twice weekly for twelve consecutive times. The temperature range was from 104 to 105 F. At each treatment the temperature was elevated for from four to five hours.

After a few treatments the eruption became less pronounced and the itching subsided. The improvement was progressive, so that toward the end of treatment the skin was clear except for areas of pigmentation and areas of excoriations. Itching considerably lessened. Three months after fever therapy there were about six slightly red, dry, excoriated areas. Itching was slight and did not disturb sleep. The patient resumed work and was in good general condition.

COMMENT

From the foregoing data it appears that an acute infection favorably influences the course of mycosis fungoides. Of five cases of this disease treated with inoculation malaria, here reviewed, the results were favorable in four. Malarial therapy apparently does not cure mycosis fungoides; it produces, however, a distinct effect on the disease, an effect greater than treatment ordinarily employed, such as arsenic and roentgen therapy. The future therapy of the disease may be the employment of all these methods. Observations are too incomplete to evaluate the therapeutic efficacy of fever produced by electrical methods. From evidence herein presented it appears that fever caused by an infection is superior. If the electrical method of producing fever is employed it would seem more desirable to combine such therapy with the injections of nonspecific proteins.

notably vaccines intravenously, in order more closely to simulate the changes that are caused by a systemic infection.

Reference is made to the stimulation of the reticulo-endothelial system by injections of antigenic substances and the rôle that such a system plays in the defensive mechanism of the body. The concomitant injections of antigenic substances with fever therapy are in accordance with the hypothesis of Jacobsen [18] that the reticulo-endothelial system, when sufficiently active (as when stimulated by one or a number of acute infectious processes), may attain in a measure the ability to cope with neoplastic diseases in a similar if not an identical manner.[19]

Malarial inoculation or fever therapy should be given consideration in treatment of other diseases constituting the lymphoblastomas.

NOTE.—The progress of the patient treated with malaria at the time (December 1935) this report goes to press is as follows: In July 1935 new lesions of mycosis fungoides appeared. Fever therapy by means of the Kettering hypertherm was administered. Twelve consecutive treatments were given two and three times weekly; the temperature range was from 104 to 105 F. Fever therapy is now being administered at weekly intervals. The improvement was not as pronounced as that occurring after malaria therapy. The patient now has many flat erythematous, scaly lesions. The appearance is comparable to that shown in figure 2. His general health is good. He is doing laborious work daily.

1934 Spruce Street.

ABSTRACT OF DISCUSSION

DR. W. R. JAFFREY, Hamilton, Ont.: The therapeutic effect of radiation on mycosis fungoides has always made me think of new growth as the causational factor, although the pathologic picture impressed me as infective. The pathologic picture shown to many pathologists in these cases varies. In a case that I had some years ago I never could get from a pathologist a diagnosis of the mycosis fungoides, and the man died of it. Our knowledge of fever therapy in syphilis shows that it combats an infective process. The effect of erysipelas on mycosis fungoides has been reported frequently enough to prove that the fever process acts against an infective disease. The effect of fever on the pathologic picture present in psoriasis further strengthens the infective origin of psoriasis. I have had occasion to treat a case of dementia paralytica presenting psoriasis. The lesions cleared and a year later the patient died of pneumonia and his lesions had not recurred at that time. I should like to have Dr. Klauder make some remarks in connection with this. As to the raising of the body temperature by biologic or by physical means, much depends on the patient. In my experience with malaria it has been demonstrated that in the treatment of neurosyphilis it can be considered a moderately safe procedure. I cannot but feel that in the malaria therapy of syphilis there is some factor of a biologic nature aside from the fever. Mycosis fungoides is such a serious disease that there is justification for risking malaria therapy. From experience I would not feel like subjecting a patient to erysipelas. I hope Dr. Klauder and his associates will report on this therapy later, although the rarity of the disease precludes any massive investigation. At least all can investigate malarial or physical means as opportunity presents itself, and final conclusions will have to be based on an accumulation of clinical reports. From my experience with the complication of erysipelas with mycosis fungoides, the length of the remission of the disease must be of extensive duration, like McCormac's report on erysipelas, before one can be at all confident, but I feel that Dr. Klauder is suggesting a therapy which we are all justified in trying when we have a case that is going to give us much trouble.

18. Jacobsen, Charles: Der chronische Reiz des reticulo-endothelialen Systems—eine Krebshemmung, Arch. f. Dermat. u. Syph. **169**: 562 (Feb.) 1933.

19. Erysipelas and Prodigiosus Toxins (Coley), editorial, J. A. M. A. **103**: 1070 (Oct 6) 1934.

DR. PAUL A. O'LEARY, Rochester, Minn.: In 1927 I inoculated a patient who had mycosis fungoides with Plasmodium vivax and allowed him to have twelve fever bouts. At the time of inoculation he had almost twelve lesions in the early tumor stage. Within a period of eleven months all the lesions except one had disappeared. The patient, however, died at this time, of a ruptured esophageal varix. The following year I inoculated a woman who had mycosis fungoides of seven years' duration. She was in the early fungating stage at the time, and, although her response was less startling than that of the previous patient, there was evident and definite improvement. She died of pneumonia some nine months after the malarial inoculation. Time went along until I had the opportunity to use the Kettering-Simpson hypertherm, and three patients have been treated by this method. One was a middle-aged man who had had the disease for five or six years but who, following the second treatment, developed a very extensive and severe herpes zoster, which necessitated discontinuing the treatment. The other two patients were women, in both of whom the disease had been of long duration. They had received roentgen therapy for many years. In these two women there has been evidence of improvement in the sense that new lesions have not appeared, although the old ones are slow in disappearing. The pruritus has left and they feel better generally. I believe that the therapeutic effect from malaria therapy as well as from hyperthermy will be long in appearing. Perhaps from eighteen to twenty-four months of observation will be necessary before appraisal of the results will be possible. Recently I have augmented the fever therapy in these patients by the use of a chaulmoogra oil derivative, as suggested by Lomholt. The combination of fever and chaulmoogra oil therapy must likewise be watched for several years before any deductions can be made as to its value.

DR. E. F. CORSON, Philadelphia: When one is confronted with the treatment of such a condition as mycosis fungoides, especially when no more reliance can be placed on the usually recommended forms of therapy, it is justifiable to strike out rather boldly in search of new methods. In the present instance one should not lose sight of the fact that temporary improvement has often been noted to follow nonspecific protein therapy, intercurrent infections and the like in this and others of the lymphoblastomas. At Dr. Klauder's suggestion I treated a private patient with fever therapy, employing a cabinet in which the body temperature is raised by means of a spray of hot water. This patient was in the tumor stage, with many marble to goose-egg sized fungoid excrescenses, numerous infiltrated plaques and much interspersed eczematoid outbreak. Following four consecutive daily treatments in which the body temperature was brought to 104.3 F. and then lowered to normal in ten hours, the patient's skin showed marked improvement. Exfoliation of the entire surface ensued in the week following this procedure and the eczematoid rash and nearly all infiltrated plaques disappeared. All the tumors flattened down and several ulcers healed. Four months after the treatment the patient has held most of her gain and is much more comfortable but is by no means rid of her disease. While the number of cases in which this method has been employed is so small that it does not as yet carry sufficient weight to be convincing, nevertheless it would appear to show at least temporary relief.

DR. C. GUY LANE, Boston: I will mention a case that comes in this group. A young man had a definite mycosis fungoides beginning shortly after the war, gradually increasing, controlled somewhat by roentgen therapy, and about four years ago becoming very nearly absolutely generalized, at which time I thought that there probably would be a fatal outcome within a comparatively short time. He had a few slight infections at that time, and just shortly after I saw him he developed pneumonia followed by a septic arm, which was later opened, a pure streptococcic infection being found, and, subsequent to this and coincident with vaccine injection, he gradually got better. I saw him six weeks later, and much to my surprise the infection was fully 60 or 75 per cent cleared up. He had no fungating lesions but simply brownish, pigmented, red areas at the site of some of his former involvements. He had a period of some year and a half of almost absolute quiescence, and then gradually lesions developed that were not controlled by roentgen

treatment. Attempts were made to duplicate, if possible the previous condition when he had fever for about three weeks. Some of the previous vaccine was obtained. Attempts were made to produce fever by means of injections of sulfur, Coley's serum and typhoid vaccine, and, in addition he was given fever treatment by means of the hypertherm, but without any relief. The disease progressed gradually and the patient died with a very marked generalized swelling, a type of termination which I have seen in only one other case.

DR. JOSEPH V. KLAUDER, Philadelphia: It is helpful at times to review old literature. The use of heat and fever employed in a limited way by the older clinicians is being revived and these are now employed in a more elaborate way. Weichel, for example, writing forty-five years ago, stated that bacterial therapy of malignant disease promises to be a successful means in the future. Of course the use of the methods that I have discussed in the treatment of mycosis fungoides is experimental. It will take years of observation to determine their value. It seems to me that the data which I have reviewed justifies the use of malarial inoculation in the treatment of mycosis fungoides. I have had little experience with fever therapy of psoriasis. The few cases that were treated in the fever therapy department of the Philadelphia General Hospital were temporarily improved. The disease soon relapsed.

Clinical Notes, Suggestions and New Instruments

POLYCYSTIC KIDNEYS WITH BILATERAL PERINEPHRIC ABSCESSES: BILATERAL OPERATION: REPORT OF CASE

FRANCIS PATTON TWINEM, M.D., NEW YORK

Patients having polycystic kidneys are not usually subjected to surgical treatment, but there are certain conditions that may arise making resort to surgery advisable.

In some cases in which there is considerable pain the Rovsing operation is indicated, puncturing or dissecting out some of the cysts that are causing pain due to the tension of the contained fluid. Other cases in which operative procedure may properly be employed are those of continued and dangerous hemorrhage and those complicated by calculus formation, renal abscess, new growth or tuberculosis.

Instances of perinephric abscess complicating polycystic renal disease are not frequent. When this condition does arise, it usually has its origin in an infected cyst. Bilateral perinephric abscess complicating polycystic disease is exceedingly rare. I have not found a case reported in the recent medical literature. Such a one is herewith reported.

J. N., a man, aged 37, a fireman, entered the Brady Foundation of the Department of Urology of the New York Hospital, March 29, 1935, complaining of pain in the left side.

The patient's father died of kidney disease (? polycystic) at 44. One brother had recently died a day and a half after nephrectomy for an infected, painful kidney. Inquiry in regard to this case revealed that the removed kidney was polycystic. Pyelographic investigation of another brother, aged 41, had recently revealed the presence of polycystic kidneys.

The patient's previous health had been good. There had been no previous operations except for correction of a nasal fracture. There was a history of gonorrhea in 1929.

Six weeks before admission he was struck in the left flank by a stream of water from a fire hose, following which he noticed pain in the left kidney region, some frequency, dysuria and slight hematuria. This condition lasted about two weeks and then quieted down but recurred four days before the patient was admitted.

Laboratory examination of the urine on admission showed an amber color, an acid reaction, a heavy trace of albumin, 10 red blood cells per high power field, 50 white blood cells per high power field, and many bacteria. Urine culture yielded Bacillus lactis-aerogenes. Blood examination revealed: red blood cells, 4,360,000; white blood cells, 17,000; hemoglobin, 80 per cent. The Wassermann reaction was negative. Blood urea nitrogen was 10 mg. The three-hour phenolsulfonphthalein excretion was 78 per cent. The temperature on admission was 98.8 F.

Bilateral pyelography at this time (fig. 1) showed a double kidney suggestive of polycystic disease in the left pyelogram.

Analysis of Specimens Obtained by Ureteral Catheterization

	Right	Left
Urea	28 Gm. per liter	14 Gm. per liter
Phenolsulfonphthalein (intravenous) appeared in	6 minutes	7½ minutes
Phenolsulfonphthalein in 10 minutes	12 per cent	1 per cent
White blood cells	0	100 per high power field

The psoas margin on the left side was obscured and a diagnosis of polycystic disease or tumor with perinephric abscess was made.

Cystoscopic examination at this time showed a moderate cystitis. Specimens obtained by ureteral catheterization are analyzed in the accompanying table.

The patient on admission was well developed and well nourished. The blood pressure was 148 systolic, 78 diastolic. There was considerable tenderness in the left upper quadrant and at the left costovertebral angle. Five centimeters below the left costal margin was felt the edge of a tender mass which did not move on inspiration.

April 5, under spinal anesthesia, the left loin was explored. The perinephric tissues were very edematous. These tissues were opened as far posteriorly as possible, releasing about 8 ounces of pus. The kidney was found to be very large, with

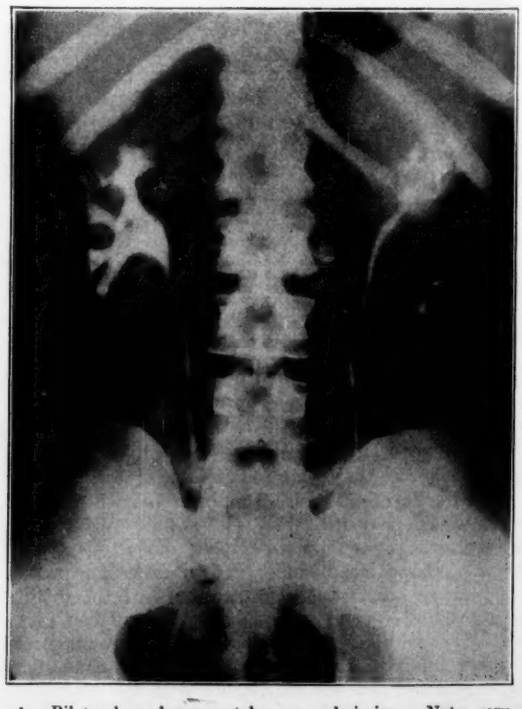

Fig. 1.—Bilateral pyelograms taken on admission. Note very large, double left kidney with obscuration of the psoas margin. Left perinephric abscess and polycystic kidney found at operation.

many cysts on its surface. Four rubber tissue drains were inserted. A culture taken from the wound at this time showed B. lactis-aerogenes.

After the operation there was some infection of the wound for several weeks. June 6 the patient had an attack of pain in the right lower quadrant with a temperature of 102.4 F. An inlying catheter was inserted into the right renal pelvis on

From the James Buchanan Brady Foundation of the Department of Urology of the New York Hospital.

June 7. A blood transfusion was given on June 12. A blood culture, taken June 10, was sterile. At this time he had an irregular fever and a large tender mass was developing on the right side. July 13, urine obtained from the right kidney by catheterization showed more than 100 white cells per high power field, with numerous clumps and many bacteria. August 23, an intravenous pyelography was done (fig. 2). This revealed a large mass in the right side, with almost total obscuration of the psoas margin. The white blood cell count was elevated at this time and the mass in the right flank had

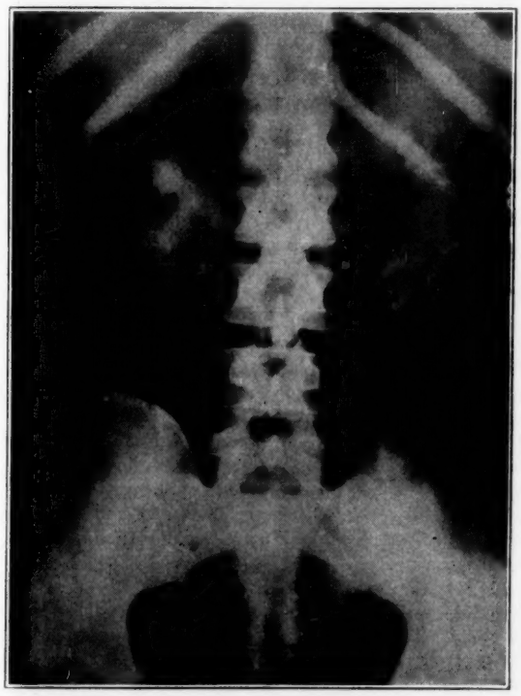

Fig. 2.—Intravenous urogram taken just before the second operation. Note the impression of a large mass on the right side with obliteration of the psoas margin. Right perinephric abscess and polycystic kidney found at operation.

become very large and tender. A diagnosis of perinephric abscess on the right side was made and operation for drainage of this abscess was performed on August 25. At this operation about 10 ounces of pus was evacuated, and the kidney surface showed numerous cysts. Several cigaret drains were inserted. Following the second operation, the patient was markedly improved but continued for several weeks to have an irregular fever, varying between normal and 103 F. However, he was fairly comfortable nearly all this time. September 11 he was given a blood transfusion. September 15 the temperature dropped to about normal and remained normal until his discharge, September 22, at which time his condition was quite good, although there was still a little drainage from the right lumbar incision.

This case has been considered worth reporting in that it exhibits the rare condition of bilateral perinephric abscess complicating polycystic kidneys. Two brothers of the patient have had definitely proved polycystic disease and the father died of probable polycystic renal disease.

The congenital nature of this disease is well recognized and has been emphasized, particularly by Crawford.[1] It has not been considered necessary to go into the embryology, pathology, symptomatology and diagnosis of polycystic disease, as these have been well covered by several authors, particularly Braasch and Schacht.[2] The surgical aspects of polycystic disease with the citation of eighty-five surgical cases have been well covered by Walters and Braasch.[3]

975 Park Avenue.

1. Crawford, R. H.: Surg., Gynec. & Obst. **36**: 185-188 (Feb.) 1923.
2. Braasch, W. F., and Schacht, F. W.: Tr. Am. A. Genito-Urin. Surgeons **25**: 71, 1932.
3. Walters, Waltman, and Braasch, W. F.: Surg., Gynec. & Obst. **58**: 647-650 (March) 1934.

GASTRIC ULCER WITH FATAL HEMORRHAGE IN THE NEW-BORN

RALPH H. KUNSTADTER, M.D., AND EUGENE GETTELMAN, M.D.,
CHICAGO

Death in the neonatal period due to acute gastric hemorrhage complicating gastric ulcer is of rare occurrence and warrants the report of any new cases.

A brief review of the literature discloses that Theile[1] in his study of the entire problem of ulcer in children lists sixty-four reported cases of ulceration of the gastroduodenal mucosa occurring during the neonatal period. These he classified as ulcerations associated with melena neonatorum. Berglund[2] found fourteen duodenal ulcers, four gastric ulcers and one combined duodenal and gastric ulcer in 1,323 postmortem examinations of children up to 13 years of age. Seventy per cent of his patients were in the first year of life. In fifty-six cases there were hemorrhagic erosions. Berglund[2] cited Dietrich, who in 8,534 postmortem examinations found 134 ulcers or scars of ulcers, six of them in children less than 10 years of age, and one of them in an infant aged 10 days. In a recent communication, Dunham and Shelton[3] reported a case of multiple gastric ulcers in a new-born infant. In a review of the literature they were impressed by the rarity of this condition. Recently Mills[4] reported a case of gastric ulcer with hemorrhage in an infant 6 days old. This infant first presented gastro-intestinal symptoms on the fourth day. Blood in the vomitus and stools was first noticed on the last day of life. Autopsy revealed multiple gastric ulcers. Streptococci were found in the tissue about the ulcers and in the sloughing débris.

In 7,044 autopsies at Michael Reese Hospital during the past twenty years only seven cases of gastroduodenal ulcerations have been found in infants under 1 year of age, and of these infants only two were younger than 1 month.

REPORT OF CASES

CASE 1.—*History.*—A white premature male infant weighing 2,145 Gm. was born spontaneously after a normal labor at 9 p. m., Oct. 30, 1934. The infant was transferred immediately to the premature infant service, Dr. Mark Jampolis attending. The infant appeared to be in good physical condition at birth

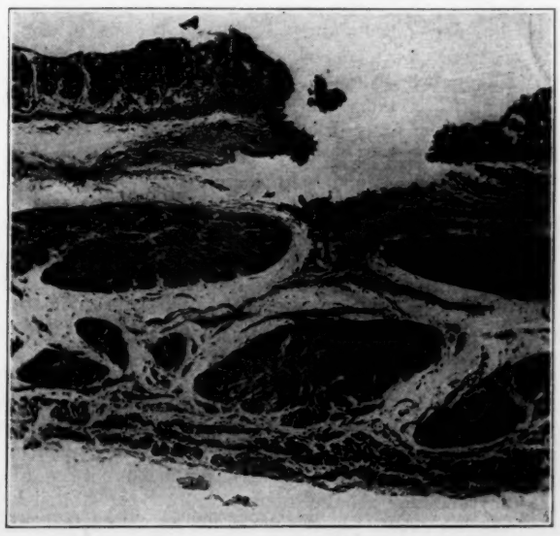

Fig. 1.—Ulceration of gastric mucosa extending to the submucosa; × 50.

and made satisfactory progress until it vomited for the first time at 2 p. m., October 31. The vomitus was dark brown, coffee ground in appearance. At 8 p. m. a small amount of

From the Sarah Morris Hospital for Children and the Department of Pathology, Michael Reese Hospital.

1. Theile, Paul: Ueber Geschwurzbildungen der gastroduodenal Tractus im Kindesalter, Ergebn. d. inn. Med. u. Kinderh. **16**: 301, 1919.
2. Berglund, Nils: Zur Kenntnis des Magen und duodenal Geschwures bei Kindern, Acta pædiat. **8**: 323, 1928, 1929.
3. Dunham, Ethel C., and Shelton, M. T.: Multiple Ulcers of the Stomach in a New-Born Infant with Staphylococcus Septicemia, J. Pediat. **4**: 39 (Jan.) 1934.
4. Mills, S. D.: Gastric Ulcer with Hemorrhage in Infants Aged Less Than One Month, Am. J. Dis. Child. **48**: 108 (July) 1934.

dark red blood was vomited. At 9 o'clock a massive amount (approximately 3 ounces) of dark red blood with clots gushed from the mouth and the infant became cyanotic. Thirty cubic centimeters of whole blood was given intramuscularly and 20 cc. of physiologic solution of sodium chloride subcutaneously. At 11:45 considerable fresh blood was again vomited, following which 4 cc. of a thromboplastic substance was given intramuscularly. During the next twelve hours hematemesis continued at frequent intervals in spite of injections of whole blood and the thromboplastic substance intramuscularly. The

Fig. 2.—Section shown in figure 1 viewed under higher power (slightly reduced from a photomicrograph with a magnification of 150 diameters).

infant appeared apathetic, with pallor and cyanosis around the mouth and nose. During the next twenty-four hours bleeding continued, muscular twitchings were frequent, pallor was pronounced and the skin had become hard and cold. Fifty cubic centimeters of blood was given intravenously in an ankle vein at 7 p. m., November 1. During the next twenty-four hours the temperature fluctuated between 103 and 105 F. Induration of the skin and subcutaneous tissue had become pronounced. Death occurred at 6 p. m., November 2, forty-five hours after birth. Although hematemesis was frequent, melena was absent at all times. Meconium was passed on two occasions on the second day. The antemortem diagnosis was gastric ulcer or ruptured esophageal varices.

Autopsy.[5]—The essential pathologic changes are confined to the heart and gastro-intestinal tract.

Macroscopic examination showed the heart to be of average size. There were several small areas of subepicardial hemorrhage. There were no retractions or adhesions of the valves. The myocardium was firm and reddish brown. The ductus arteriosus and foramen ovale were patent. The great vessels presented no gross abnormalities.

The stomach and first portion of the duodenum were greatly distended. Distal to this, the duodenum was flattened. Opening of the stomach and duodenum revealed that there was a complete atresia of the duodenum just proximal to the ampulla of Vater. The stomach and dilated portion of the duodenum contained about 2 ounces (60 cc.) of clotted blood. There was not even a suggestion of a lumen to establish continuity between the first and second portions of the duodenum. The mucosa along the greater curvature of the stomach was studded with many pin-head ulcerations. The latter extended through the mucosa. They were surrounded by a rim of grayish necrotic-looking tissue. The mucosa of the stomach was hemorrhagic. The mucosal surface of the portion of the duodenum proximal to the atresia was covered by a layer of thick mucus. The remainder of the bowel presented no gross abnormalities. The mesenteric lymph nodes were not enlarged.

Microscopic examination of the heart showed no changes except for moderate vacuolation of the muscle fibers.

5. Autopsies were performed by Dr. Otto Saphir of the Department of Pathology.

One section of the stomach showed an ulcer, which extended through the mucosa to the submucosa. The base of the ulcer was composed of necrotic tissue, in which were scattered a few red blood cells (figs. 1 and 2). The margins of the ulcer were formed of necrotic tissue.

CASE 2.—*History.*—A white male infant weighing 2,875 Gm. was delivered spontaneously at 6:45 a. m., Aug. 30, 1935, after an eight hour labor. At 4:15 a. m. morphine sulfate ⅙ grain (0.01 Gm.) and scopolamine hydrobromide 1/150 grain (0.0004 Gm.) were given hypodermically. At birth the infant was narcotized, and resuscitation was accomplished with some difficulty by tracheal catheterization and external stimulation.

The mother's obstetric history was irrelevant, as she was in excellent health throughout her pregnancy.

The baby was offered 5 per cent dextrose solution at frequent intervals during the first twenty-four hours and was placed on the breast at the beginning of the second day. At 7 p. m., August 31 (36 hours old) the infant vomited approximately 1 ounce (30 cc.) of fresh blood, some of which was clotted, and passed a small amount of dark clotted blood from the rectum. At 8 p. m., 15 cc. of the mother's blood was given intramuscularly. At 8:30 it again vomited a large amount of bright red blood. When first seen by one of us (R. H. K.) at 9 o'clock the baby appeared somewhat listless. The crib linen adjacent to the head was soaked with fresh blood. The face was covered and the pharynx was filled with blood. The anterior fontanel was moderately depressed. The heart was rapid, the pulse was feeble and the lungs were normal to physical examination. The abdomen was moderately distended. The liver was palpated one fingerbreadth below the right costal margin. No intraperitoneal fluid was demonstrable. The impression was gastric ulcer of the new-born, traumatic erosion of the esophagus, or hemorrhagic disease of the new-born. At midnight 50 cc. of physiologic solution of sodium chloride was given subcutaneously. The infant appeared listless. At 6 a. m., September 1, the baby became cyanotic, the respirations were rapid and it appeared critically ill. Blood was exuding from the rectum. The baby was placed in an oxygen unit and at 8 o'clock 40 cc. of the father's blood was given intravenously in an ankle vein. During the next nine hours the baby appeared to improve. The cyanosis had disappeared and there was only slight regurgitation of blood and little being passed by rectum. At 5 p. m. the infant suddenly became cyanotic, and twitching of the extremities appeared. At 6:10 respirations suddenly ceased and the baby died, fifty-nine hours and twenty-five minutes after birth.

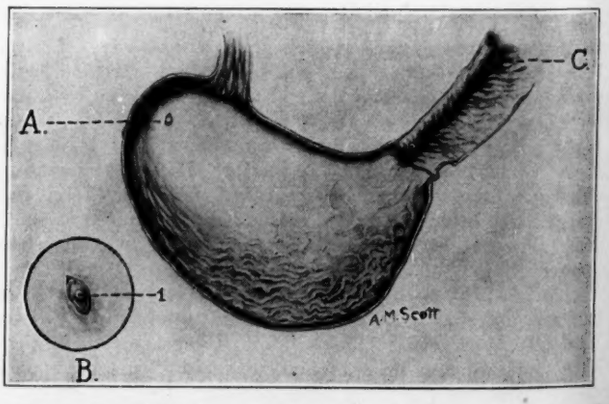

Fig. 3.—*A*, gastric ulcer. *B*, enlargement of *A*; 1, small blood vessel in base of ulcer. *C*, anomalous extension of common bile duct through submucosa.

Autopsy.—The essential pathologic changes were confined to the lungs, and the gastro-intestinal tract.

On macroscopic examination the lungs were subcrepitant. The pleural surfaces were smooth and had a dark pink color. Sectioning showed a pink cut surface, which presented a few small dark red areas scattered throughout its substance. All five lobes presented a similar appearance. The trachea and large bronchi contained a small amount of purulent exudate.

The stomach was dilated and filled with old clotted blood. In the cardiac region along the greater curvature there was a

small superficial erosion, which extended through the mucosa and submucosa (fig. 3). This erosion measured 2 mm. in diameter. In the base of the erosion there was a small blood vessel. The margins of the erosion were smooth and slightly undermined. The remainder of the intestinal tract was filled with clotted blood.

Microscopic examination of the lungs revealed many areas that contained little or no air. In these areas the alveolar walls were in opposition and the alveolar spaces were absent. In other areas the alveolar spaces contained much fibrin, extravasated red blood cells and polymorphonuclear leukocytes. In other areas normal air-containing lung was seen. In one area there was a small subpleural hemorrhage. The blood vessels of the lung were engorged with red blood cells.

The stomach was preserved for a museum specimen. No sections were taken.

COMMENT

The outstanding features of the two cases presented are the persistent hematemesis of fresh blood with the onset occurring within the first thirty-six hours after birth. In case 1 there was no melena, whereas in the second case melena was a prominent feature. Of significance also was the failure of the hemorrhages to cease following the administration of blood intramuscularly and by transfusion. Case 1 was characterized pathologically by the presence of multiple pin-head sized ulcerations extending through the mucosa, surrounded by a rim of necrotic tissue, and a complete atresia of the second portion of the duodenum proximal to the ampulla of Vater. In case 2 there was a solitary ulceration located along the greater curvature in the cardiac region, extending through the mucosa and submucosa exposing and eroding a small blood vessel.

Usually hemorrhagic disease of the new-born is characterized by the fact that the bleeding is spontaneous in origin, not related to delivery or primarily to trauma, is multiple in location, often tends to cease spontaneously after a limited time, and is influenced favorably by treatment; namely, injection of whole blood intramuscularly or by transfusion. The amount of blood lost is usually not great but there is continuous oozing. Bleeding from the gastro-intestinal tract is a frequent site of origin of the spontaneous hemorrhages of the new-born. It is more common from the intestine than from the stomach and begins in the first three days of life. The blood vomited is usually not abundant and appears in dark brown clots; rarely it is bright red.

According to Holt,[6] in most instances autopsy shows little except the hemorrhage in the various locations and the paleness of the organs due to loss of blood. Rarely, ulcers are found in the stomach and duodenum.

Hematemesis is the chief symptom of ulcers of the stomach in the new-born unless complicated by perforation and peritonitis. According to Theile,[1] as clinical manifestations hematemesis and melena were found in varying frequency dependent on the location of the lesions. Hematemesis occurred more frequently in gastric ulcer, whereas melena was more prevalent in the duodenal lesions.

In the reported cases, the distribution of the ulcers is about equally divided between the stomach and the duodenum; of Theile's group, twenty-nine were gastric and thirty-one duodenal in location. There was no information available in four of his cases. Solitary ulcers are found with greater frequency in the duodenum than in the stomach, where the incidence of single and multiple lesions is approximately equal.

The cause of ulcers in the stomach is obscure. Shore[7] believes that a local disturbance in circulation with secondary necrosis and ulceration due to the action of gastric juice is the mechanism of formation. He lists congestion due to asphyxia, embolism, thrombosis, vascular disease, direct injury to the mucosa and nervous influences as contributory factors. Weiss and Mallory[8] mention vomiting as a cause of lacerations or ulcers in the cardiac end of the stomach. Dunham and Shelton[3] emphasize the rôle of sepsis as the cause of multiple gastric ulcers in the new-born.

In case 1 we believe that the presence of the duodenal atresia was an important etiologic factor. Hyperperistalsis with vomiting and the inability of the stomach to empty its contents might have resulted in injury to the gastric mucosa followed by autodigestion. The possibility of sepsis is excluded by the failure of microscopic sections to reveal pathogenic organisms. As to the etiology of our second case we have no satisfactory explanation. The asphyxia present at birth could hardly be responsible for a single lesion. In view of the location of the lesion, it is remotely possible that the tracheal catheter used for resuscitation at birth accidentally entered the stomach and injured the mucosa.

104 South Michigan Avenue.

6. Holt, L. E., and Howland, John: Diseases of Infancy and Childhood, New York, D. Appleton & Co., 1926, p. 80.
7. Shore, B. R.: Acute Ulcerations of the Stomach in Children, Ann. Surg. **92**: 234 (Aug.) 1930.
8. Weiss, Soma, and Mallory, G. K.: Lesions of the Cardiac Orifice of the Stomach Produced by Vomiting, J. A. M. A. **98**: 1353 (April 16) 1932.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE. HOWARD A. CARTER, Secretary.

MEDICAL DIATHERMY

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Medical diathermy is the production of heat in the body tissues for therapeutic purposes by high frequency currents, insufficient in amount, however, to produce temperatures high enough to destroy the tissues or impair their vitality. These currents are applied locally by three methods: (1) with contact metal electrodes, (2) with a high frequency alternating electric field, or (3) with a high frequency electromagnetic field.

The first method is the one by which conventional diathermy is applied. The frequency of oscillations is usually from one-half million to two million cycles per second.

The second method for the local application of high frequency currents is the use of a high frequency electric field.[1] The frequency of oscillations may be from ten million to one hundred million cycles per second. The local part to be treated is placed between two insulated electrodes. The electrodes are not in contact with the skin, as with the conventional medical diathermy electrodes. These short wave diathermy electrodes are metallic plates insulated by rubber or felt. The electrodes are incased in rubber or felt to prevent arcing from the metal to the skin. When applied they are usually separated from the skin by a half-inch layer of dry felt or towels. The towel or felt is placed between the electrodes and the skin to prevent the accumulation of surface moisture into small conducting areas, which might produce burns.

The usual methods of applying electric field electrodes, not unlike those used in conventional diathermy, are (1) to place a small condenser electrode over the part to be treated with a large dispersive electrode on the opposite side so that there is a concentration of heating effect under the area of the smaller electrode, (2) to place electrodes of the same size on opposite sides of the part undergoing treatment, or (3) to use double cuff electrodes. Ordinarily these cuffs are placed so that the part to be treated is midway between them. When the double cuff is used on limbs with a joint involvement, it is important to be sure that the joint under treatment is extended. If the joint is flexed, the current density will be much greater in the

1. For this method the Council on Physical Therapy is using the term "short wave diathermy." It is also known as short wave therapy, ultrashort wave therapy, radiotherapy and radiothermy.

shorter path. Of the three, the double cuff method, according to recent experiments,[2] always showed superior heating of the deep tissues of the human thigh; in fact, this mode of application of electric field electrodes was the only one in these experiments that insured better heating of the deep tissues than was obtained with conventional diathermy employing contact electrodes applied opposite each other.

It is believed that with the high frequency electric field the point of entry of the current should be large enough so that the current density per unit area (i. e., temperature) will not exceed skin tolerance. The importance of this is shown in the work of Mortimer and Osborne,[2a] in which the tolerance of the patients controlled the current intensity. High frequency electric energy applied by pad electrodes of equal size, placed on opposite sides of the thigh, caused heating of 1.2 degrees F. in the quadriceps extensor muscle 1½ inches below the anterior skin surface (average of eight subjects), whereas, with cuff electrodes having a greater area of entry for the current, the temperature rise at the same point below the surface was 4.8 degrees F. In this work, one cuff electrode was placed around the thigh proximal to the thermocouple and the other distal to it.

The sensation of temperature experienced by a patient is no indication of the amount of heat being developed in the deeper tissues. Experiments [2a] show that, with short wave apparatus utilizing electric field electrodes, excessively high superficial temperatures may be secured; yet only a negligible increase in temperature may be obtained in the deep tissues.

The relative efficacy of the various methods of applying short wave high frequency currents under identical experimental conditions is: 1. Cable and coil, or double cuffs. 2. Electric field electrodes. 3. Glass or composition, air-separated electrodes.[2]

By the electric field method, it is assumed that the heat is due to the ohmic resistance of tissues to high frequency alternating currents passing through them; or, again, it may be due to dielectric losses within the tissues in the electric field; others believe that the resulting heat may be a combination of the two effects.

The third method of heating tissues by high frequency currents is by electromagnetic fields, or so-called electromagnetic induction. In this method the current is conducted to the patient through a flexible, heavily insulated cable, which is wound around the part to be treated in the form of coils or loops. The part to be treated is separated from the coil or loop by a towel for the same reason noted under the second method.

The exact physical phenomena taking place within the tissues, causing generation of heat, have not been fully explained. However, it is believed that within the helical coil, through which the high frequency current flows, there is set up an alternating magnetic flux having the same frequency as the current in the coil. If a conductive material is placed within the coil, an electromotive force will be induced in it. As a result of this induced voltage, eddy currents of the same frequency as the exciting current will flow in the conductive material, generating heat in the tissues.

Burns may occur with any method of applying short wave medical diathermy, as well as when using the contact metal electrodes of conventional diathermy. The manufacturers of short wave machines claimed in their early advertising matter that burns were impossible. The Council was unable to accept these claims, since evidence was available that burns did occur with short wave diathermy.[3]

To avoid burns, several layers of absorbent material are placed between the electrodes of the short wave diathermy machine and the skin, to absorb perspiration. The collection of moisture between the skin and the electrodes would cause a concentration of energy at these points, and burns would result if the patient did not indicate that there was a burning sensation. The patients who have been burned have had a distinct sensation of burning. This would be expected, as the subcutaneous tissues are always warmer than the deeper tissues. Such burns resemble those obtained by electrocoagulation and they are slow in healing.

PHYSIOLOGIC EFFECTS OF LOCAL MEDICAL DIATHERMY

The effects of an electric current when applied to the body tissues may be thermal, chemical or mechanical in nature, depending on the physical characteristics of the current. High frequency currents apparently avoid the mechanical and chemical effects but have the ability to heat the body tissues through which they pass. At the present time it is believed that the local physiologic effects of the three methods of applying high frequency currents are limited to the effects of the heat produced.

Vasomotor Changes.—In the application of heat to body tissues, with temperatures between 64 and 102 F., a large number of capillaries are opened, the rate of blood flow through these capillaries is increased, the tissue metabolism is accelerated, and the rate of exchange between the blood and tissues is augmented and reaches its optimum. The blood entering the vein contains from 60 to 65 per cent of its saturated value of oxygen. Above 102 F. more capillaries are opened, and the flow of blood may become so rapid that when it enters the veins it simulates the arterial blood, and the concentration of oxygen may reach about 91 per cent of its saturated value. The rapid circulation increases the thermal conductivity of the tissues and distributes the heat through the body and thus hinders the rise in local temperature. The changes are due partly to nervous reflexes and consequently may involve distant areas not primarily affected by the temperature change.[4]

Capillary Pressure and Fluid Interchange.—When heat is applied to an area, the superficial capillaries and veins are dilated, the blood flow is increased and the capillary pressure is raised. The hypothesis, according to Bazett,[5] is that fluid interchange between the blood and the tissue fluids depends normally on a simple balance between the hydrostatic pressure of the blood in the capillaries and the osmotic pressure of the protein colloids, which enables them to pass the capillary wall and exert an attractive force on watery solutions of diffusible substances. A rise of surface temperature that increases the local circulation rate and raises capillary pressure will increase the rate of edema formation when the venous pressure is maintained at a constant level. Therefore a rise of temperature must be expected to increase lymphatic drainage greatly and this may be of value in modifying disease conditions.

2. (*a*) Mortimer, Bernard, and Osborne, S. L.: Tissue Heating by Short Wave Diathermy, J. A. M. A. **104**: 1413 (April 20) 1935. (*b*) Mortimer, Bernard, and Beard, Gertrude: Tissue Heating by Short Wave Diathermy, ibid. **105**: 510 (Aug. 17) 1935.

3. (*a*) Krusen, F. H.: Short Wave Diathermy, J. A. M. A. **104**: 1237 (April 6) 1935. (*b*) Kling, D. H.: Burns, Produced by Radio Short Wave and Ultra-Short Wave Therapy, ibid. **104**: 1918 (June 1) 1935.

4. Gibbon, J. H., Jr., and Landis, E. M.: J. Clin. Investigation **11**: 1019 (Sept.) 1932.

5. Bazett, H. C., in Principles and Practice of Physical Therapy, Hagerstown, Md., W. F. Prior Company **1**: 4, 1934.

It may prove to be a detriment in certain conditions, and when lymphatic drainage is obstructed the collection of fluid might cause pressure on venous channels and so, secondarily, interfere with circulation. Edema is not detectable until a collection of at least 8 cc. per hundred cubic centimeters of tissue has occurred.[6] This may explain the poor results seen in the local application of medical diathermy in chronic arthritis, for Pemberton [7] states that it is justifiable to entertain the hypothesis that the rheumatoid syndrome is partially characterized by a condition of low-grade edema of the tissues which is more or less systemic in nature.

Blood.—Bazett [5] states that when blood is warmed the dissociation constants of the acid radicals of the proteins are increased to a much greater extent than is that of carbonic acid. In consequence, if blood is warmed and the total carbon dioxide content is constant, the proteins combine with much base previously in the form of sodium or potassium bicarbonate, the carbon dioxide thus freed is added to the free carbonic acid originally present, the acidity is greatly increased, and the carbon dioxide tension is raised. The change in carbon dioxide tension is further exaggerated by diminution in its solubility. An alteration of 1.8 degrees F. causes an increase in acidity comparable to the normal difference between arterial and venous blood.

Bazett further states that, "in spite of the great changes in the venosity of the blood, the direct effect of the temperature changes on the blood far outbalances them, so that changes in acidity, etc., are mainly determined by the latter factor." His figures on this subject show that the great changes in gas tension and acidity may be of some importance in modifying the reaction of tissues to infections. With a surface temperature of 59 F. and a blood temperature of 62.6 F., the carbon dioxide tension was between 15 and 20 mm. and the oxygen tension between 15 and 30 mm. while, with a surface temperature of 107.6 F. and a blood temperature of 104 F., the carbon dioxide tension was 45 mm. and the oxygen tension between 70 and 95 mm.

Phagocytosis.—Bazett [5] states that the activity of leukocytes in phagocytosis is probably greatly modified by temperature. The locomotion of leukocytes in vitro is certainly so affected; the maximal velocity is reached at 104 F.

Metabolism.—Any change in temperature has a profound effect on the metabolic changes in any tissue. Bazett [5] states that, where this effect may be observed on isolated organs, the change is such that these chemical changes are increased two or three times for a rise of 18 degrees F.

Special Selective Thermal Action.—By means of short wave diathermy, numerous in vitro experiments have been used to prove that short wave diathermy currents have special selective thermal action. Mortimer and Osborne [2a] in their work made a digest of the literature on this subject. They demonstrated by experiments on human subjects, with thermocouples inserted into the subcutaneous tissues and into the quadriceps extensor muscle for approximately two inches, that the greatest rise of temperature was in skin and in subcutaneous tissues under the electrodes, that this temperature was always higher than the intramuscular temperature, and that the body strives to dissipate and distribute the heat as rapidly as possible, as shown by the rise in mouth temperature. Therefore, with short wave diathermy as with conventional diathermy, there is a thermal gradient from the hot skin and subcutaneous tissues to the less hot tissues within.

Specific Biologic Action.—Mortimer and Osborne [2a] state: "There is no conclusive evidence from the literature nor were we able to substantiate the claim of specific biologic action of high frequency currents (short wave diathermy). In our opinion the burden of proof still lies on those who claim any biologic action of these currents other than heat production."

Specific Bactericidal Action.—Many claims for specific bactericidal action have been made for the short wave diathermy currents. In a recent digest of the literature on this subject,[2a] it would seem that confirmation of these claims is lacking. At present, the results can be explained only on the basis of the heat generated.

INDICATIONS

Karsner and Goldblatt [8] state that, when one is investigating methods used in physical therapy, the evaluation of the treatment is not to be measured by the opinions of the physician but rather by the facts one can demonstrate. The main essential in any experiment in therapy is that observations with the particular form of treatment must be controlled and checked in a series of patients without treatment. The number of observations must be large enough to minimize some of the disadvantages of random sampling.

In a recent advertisement for a short wave diathermy machine, there was noted a list of about 130 diseases that were supposed to be benefited by short wave diathermy. This list was alphabetically arranged, beginning with abscess and ending with verruca nevi. Surely this list did not fulfil the conditions mentioned by Karsner and Goldblatt.[8]

For the present, it is believed that the general practitioner will avoid unpleasant and disagreeable circumstances if he accepts and follows the indications and contraindications suggested for conventional diathermy in his short wave diathermy practice.

Well established evidence indicates that the local application of heat is effective as an adjunct in the treatment of certain traumatic or inflammatory changes in the bones, joints, bursae, muscles, ligaments and tendons.[9] Both long and short wave diathermy are effective methods of applying heat and can be used to advantage for many of these conditions. There is no available evidence that medical diathermy has any effect other than that due to the heat produced; therefore it should be used only as an adjunct to other treatment in the conditions mentioned in an article by Gill [9] dealing with the application of heat.

Treatment of bursitis by means of diathermy has many advocates. In an earlier article, I [10] wrote: "In considering the reported results of diathermy in calcified subdeltoid bursitis, it is wise to remember that in some cases these deposits disappear without any treatment whatever. If the deposit of a calcium salt reacts like any other calcium deposit, in that it may form without an apparent cause, it is often fragmented and may disappear spontaneously as well as under the influence of such treatment as diathermy." In the sharply localized and tender deposits, it is sometimes simpler and

6. Bazett, H. C.: Arch. Phys. Therapy **13**: 453 (Aug.) 1932.
7. Pemberton, Ralph: Arthritis and Rheumatoid Conditions, ed. 2, Philadelphia, Lea & Febiger, 1935.
8. Karsner, H. T., and Goldblatt, Harry: Evaluation of Methods Used in Physical Therapy, J. A. M. A. **100**: 1495 (May 13) 1935.
9. Gill, A. B.: Heat in Surgical and Orthopedic Conditions, J. A. M. A. **106**: 40 (Jan. 4) 1936.
10. Coulter, J. S.: Medical Diathermy, J. A. M. A. **98**: 1987 (June 4) 1932.

quicker to remove the calcified deposit by a small incision and a curet, or by injecting the bursa and, if possible, the deposit with physiologic solution of sodium chloride under considerable pressure in order to distend the bursa and dissipate the deposit, as Dr. Smith-Petersen has advocated.

In arthritis, the use of diathermy is sometimes observed to give benefit from a clinical point of view, but it is contraindicated and has been disappointing in many chronic cases. At times medical diathermy in arthritis causes an aggravation of the local symptoms.

If some short wave machines can give such marked temperature increases in deep tissues, Pemberton and Osgood's [11] warning relative to the application of medical diathermy to superficial joints should be remembered. They state:

> In many of the superficial joints, however, real danger of harm lurks in any but the most skilful administration of diathermy. The articular cartilage of joints is devoid of both sensation and circulation, possessing neither protective nerves nor cooling blood vessels. Moreover, articular cartilage has no power of regeneration, and, if injured, has little power of repair. Suggestions of irreparable damage to this essential structure from the injudicious administration of diathermy to the knee joint have come within the purview of the writers, and we believe the danger is not theoretical but very real. It has become more imminent since there has been recently such a successful marketing of these machines to physicians who possess no working knowledge of either electricity or physics. This method of applying heat has a very definite place but presumes an intimate acquaintance with both the varying resistance of body tissues and the technical application of this modality.

The action of diathermy in stimulating consolidation of a fracture must be regarded as distinctly *sub judice* until additional evidence has been obtained, according to Wilson.[12] He also states:

> In the meantime, if the effect of diathermy is to be tried in cases of delayed union, it will be advisable to limit its use to those fractures where no mechanical causes exist to account for the retarded healing, such as interposition of tissue between the fragments or lack of proper reduction, and also to use it not later than three or four months after the injury. Beyond this period the local situation in respect to callus formation has become so static that it is impossible to see how heat or hyperemia would be of any assistance.

Many claims have been made for the use of short wave diathermy in the treatment of infections such as furuncles and abscesses. Infections have been treated for years with heat in the form of continuous hot, moist dressings. It is questionable whether the greater heat of short wave diathermy applied for short periods could replace these hot, moist dressings or improve on the results obtained with them. It is believed that, until otherwise proved, the contraindication for conventional diathermy in acute inflammatory processes such as acute nondraining cellulitis still holds for short wave diathermy. Hot, moist dressings and proper drainage for superficial infections are still the best surgical procedures for these conditions.

Bierman and Schwarzschild,[13] who have treated infections with short wave diathermy, say:

> It is therefore not necessary to ascribe any specific effects of the short wave currents upon micro-organisms to explain the beneficial influence of a procedure which creates heat in the involved area with a thoroughness greater than any other measure used thus far. It is our definite impression that when drainage does exist, the infected process usually appears to heal very much more rapidly following short wave applications than with any other forms of treatment we have used heretofore.

In the management of pneumonia, medical diathermy does seem to be of definite benefit in reducing the severity of the thoracic pain. It is not an accepted specific treatment in lobar pneumonia. Binger [14] says "There is no reason to believe that exudates will melt as the result of diathermy." His experiments with conventional diathermy reveal no evidence that the temperature of the pneumonic lung can be raised to more than a degree above the systemic temperature. Tillett [15] says: "By means of diathermy, attempts have been made to influence the course of pneumonia through the direct application of heat to the diseased lung. The reports so far made record favorable results, but the instances are too few to be convincing."

Medical diathermy has been recommended in the treatment of nephritis, but no recent literature substantiates the earlier claims of benefit, and the mass of experimental work would indicate that it could not have much influence on kidney function.

For treating gonorrheal urethritis, the use of conventional diathermy has been discounted in recent textbooks of urology and is not advocated as a treatment for acute urethritis. Gonococcus in culture will survive thirty minutes at a temperature of 113 F., and even with the improved short wave machines there is little prospect of attaining this temperature with local treatment in all parts of the male urethra without overheating certain parts.

Harrison [16] believes that diathermy is the treatment of choice in those cases of acute prostatitis occurring either as a complication of an acute urethritis or in that smaller group of cases in which the infection is hematogenous from disease elsewhere, such as influenza. Referring further to chronic prostatitis, Harrison writes of diathermy: "It is true that the symptoms are relieved, but in other respects the condition is similar to that in cases treated by digital massage, in other words, discouraging."

In acute epididymitis, the elevation of temperature by diathermy is distinctly beneficial for the relief of pain and hastens the subsidence of the infection. It has been questioned whether medical diathermy should be used, because its heat might destroy temporarily or permanently the spermatogenic function of the testicle; and, if so, such an objection would be even more applicable to some of the short wave appliances as they generate deeper heat than contact, metal electrode diathermy. Of course, the disease itself destroys spermatogenic function. If used in acute epididymitis, medical diathermy should be used only as an adjunct to rest in bed with the testicles elevated, forcing of fluids, and possibly nonspecific protein therapy.

When treating acute arthritis, which occurs as a complication of acute gonorrheal urethritis, the treatment, in the opinon of Harrison,[16] should be directed accordingly (1) to the acute urethritis, (2) to the sterilization of the blood stream and what results may be accomplished by chemotherapy, and (3) to the joint. Here diathermy produces beneficial results.

11. Pemberton, Ralph, and Osgood, R. B.: The Medical and Orthopaedic Management of Chronic Arthritis, New York, Macmillan Company, 1934.
12. Wilson, P. D., in Principles and Practice of Physical Therapy **1**: 5, 1934.
13. Bierman, William, and Schwarzschild, Myron: New England J. Med. **213**: 515 (Sept. 12) 1935.
14. Binger, Carl, in Principles and Practice of Physical Therapy **1**: 15, 1934.
15. Tillett, W. S.: Cyclopedia of Medicine, Philadelphia, F. A. Davis Company **9**, 1934.
16. Harrison, F. G., in Principles and Practice of Physical Therapy **2**: 21, 1934.

Diathermy has been used in arterial hypertension and has been recommended for a number of years, but, as is so often the case, the subjective improvement is without any appreciable change in the blood pressure,[17] at least for any extended period of time.

Medical diathermy in otolaryngology has been widely advocated. Beck and Guttman [18] give views on the use of contact, metal electrode diathermy that might be adopted by the general practitioner. When treating otitis media, they state, "the use of diathermy is contraindicated before the rupture of the drum and after incision it is of little benefit." For acute mastoiditis, "medical diathermy is mentioned only to be condemned in such conditions." For chronic otorrhea, they state, "as a rule we have seen little or no benefit follow the use of . . . medical diathermy in spite of the enormous amount of literature dealing with the use of these agents in this condition." In the management of deafness, their opinion is that medical diathermy has caused little if any benefit in deafness due to chronic adhesive otitis media, otosclerosis or labyrinthine deafness. They state that in tinnitus aurium diathermy has been repeatedly advocated, but that in their hands it has been attended with little success. In chronic sinusitis they had the same negative results.

The indications for medical diathermy in diseases of the eye are by no means well established according to Gifford.[19] Medical diathermy may relieve pain in the neuralgia of herpes zoster. Monbrun and Casteran [20] report good results in certain corneal ulcers, especially those following facial paralysis. These authors advise against the employment of medical diathermy in intraocular diseases and consider it especially contraindicated in glaucoma.

Diathermy has been advocated by some as having value in improving the circulation in circulatory disturbances of the extremities.[10] It may be used locally or to induce an artificial increase of temperature. Great care should be exercised to avoid burns. It should be used as an adjunct to other forms of treatment and usually combined with circulatory exercises, continuous heat with an electric baker, and warm baths. Early cases of circulatory impairment may be definitely benefitted, and the progress of the disease may be arrested. However, it is clear that in a complete vascular occlusion, with adequate collateral circulation, such measures can only fail and do no good.[21] It should be remembered that in these conditions Starr [22] found that a temperature of from 33 to 35 C. usually relieves pain, and temperatures above or below this optimal temperature may increase the pain.

Medical diathermy may be used in salpingitis as an adjunct to the usual methods of treatment. The application is either with electrodes over the suprapubic area and over the sacrum or with a special vaginal electrode and a belt electrode encircling the waist. In pelvic inflammatory diseases the good that diathermy accomplishes is in all probability due to the increase in circulation brought about by the local application of heat, rather than from any heat generated in the tissues themselves, and surely not from any destruction of bacteria by heat.

Little evidence has appeared in recent literature suggesting the favorable effects of medical diathermy in pelvic infections. In the most recent literature advocating the use of heat for this condition, one finds an objection to using an electrode in the vagina. In normal conditions the vaginal mucous membrane is in rugae or folds and, in inflammatory conditions, these may be greatly increased, so that the temperature produced from an electrode would be quite unevenly distributed.[23]

For the application of short wave diathermy it is to be noted that no satisfactory orificial electrode has yet been devised.[3a] With electrodes over the symphysis and under the buttocks, Schultze-Rhonhof and Rech [24] applied short wave diathermy to the pelvis and measured the temperature in the urine-filled bladder, vagina and rectum with alcohol thermometers. They concluded that a pronounced heat effect could not be recognized in these regions, although a noticeable heating of the skin was obtained.

DOSAGE

When medical diathermy is used, the patient's skin tolerance to temperature must regulate the dosage. The milliameter on the high frequency apparatus does not measure the electrical energy passing through the patient. The patient's tolerance is the most important guide for the final dosage to be used. If it is suspected that the heat sensation of the skin over which the electrodes are placed is subnormal, it is advisable to test the skin with hot water in a test tube.

It is to be emphasized that when treating with short wave diathermy there should be no clothing between the electrode and the skin. If a patient should receive a burn from a treatment by short wave diathermy and the clothes had not been removed, there might arise a medicolegal situation that would be embarrassing to the physician. Inspection of the skin of the part treated following the treatment is important.

Kovacs [25] calls attention to the fact that the regulation of dosage with short wave diathermy is an even more empirical procedure than with ordinary diathermy. The milliamperemeter is connected to the oscillatory circuit of the apparatus and serves chiefly as an indicator that electrical energy is passing. It will also indicate that in a certain position of the controls, when the patient's circuit is tuned to the main oscillator circuit, there is a maximum flow of energy in the treatment field, but it does not indicate that the energy is passing through the patient.

CONTRAINDICATIONS

The local applications of high frequency currents are contraindicated (1) in acute inflammatory processes, such as acute nondraining cellulitis, acute infectious arthritis, and acute pelvic infection; (2) in any condition in which there is a tendency to hemorrhage, such as a gastric ulcer; (3) over areas in which the appreciation of heat has been impaired or lost, as in certain peripheral nerve injuries; (4) through the abdomen, pelvis or lower part of the back during pregnancy, during menstruation, or thirty-six hours before or after menstruation; (5) over areas where there is a suspected malignant growth, and (6) in diseases or injuries in which simpler methods of applying external heat give satisfactory results.[26]

17. Hay, John, and Ince, Phoebe: Lancet **2**: 799 (Oct. 16) 1926, quoted by R. S. Palmer: New England J. Med. **203**: 208 (July 31) 1930.
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19. Gifford, S. R., in Principles and Practice of Physical Therapy **2**: 23, 1934.
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24. Schultze-Rhonhof F., and Rech, W.: Arch. f. Gynäk. **157**: 468 (Aug.) 1934.
25. Kovacs, Richard: Electro Therapy and Light Therapy, ed. 2, Philadelphia, Lea & Febiger, 1935.
26. Coulter, J. S., and Osborne, S. L., in Principles and Practice of Physical Therapy **3**: 22, 1935.

CONCLUSIONS

1. The indications for short wave diathermy are essentially the indications for conventional diathermy. However, it may be shown later that the superior heating ability of certain high frequency apparatus will be effective when conventional diathermy has failed. Further research and careful evaluation of clinical results are required.

2. So far as competent investigators have been able to determine, there is no demonstrable, selective thermal action in vivo, nor specific biologic or bactericidal actions that may be attributed to short wave diathermy. To date, the effects produced can be explained only on the basis of the generation of heat.

303 East Chicago Avenue.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

MAPHARSEN.—The hemialcoholate of 3-amino-4-hydroxy phenylarsine oxide hydrochloride.—$HCl.(NH_2)C_6H_3(OH)AsO.\ ½C_2H_5OH$. It contains approximately 29 per cent of trivalent arsenic.

Actions and Uses.—Mapharsen is proposed for the treatment of syphilis. It is stated to exhibit a relatively constant parasiticidal value. It is claimed to have a rapidly beneficial effect, particularly on early syphilis, with disappearance of spirochetes, healing of lesions, and reversal of positive Wassermann reactions in a large percentage of cases. The reactions following the use of mapharsen have on the whole been less severe than those observed after the use of arsphenamine or neoarsphenamine.

Dosage.—Intravenously, 0.03 Gm. for women and 0.04 Gm. for men, initially. The dose may be increased at the second injection to 0.04 Gm. for women and 0.06 Gm. for men. The maximum weekly dose, which should not be given any patient at the first injection, may be regarded as 0.06 Gm. For children, the initial dose should not exceed 0.0005 Gm. (0.5 mg.) per kilogram of body weight; the total weekly dose should average between 0.0005 and 0.001 Gm. (between 0.5 and 1 mg.) per kilogram of body weight.

It should be noted that the safe dosage of mapharsen is much lower than that of the arsphenamines.

Manufactured by Parke, Davis & Co., Detroit. U. S. Patent applied for. U. S. trademark 299, 173.

Ampoules Mapharsen 0.04 Gm.: Each ampule contains mapharsen 0.04 Gm., anhydrous sodium carbonate 0.010 Gm. and anhydrous purified sucrose 0.149 Gm.

Ampoules Mapharsen 0.06 Gm.: Each ampule contains mapharsen 0.06 Gm., anhydrous sodium carbonate 0.016 Gm. and anhydrous purified sucrose 0.224 Gm.

Ampoules Mapharsen 0.4 Gm.: Each ampule contains mapharsen 0.4 Gm., anhydrous sodium carbonate 0.10 Gm. and anhydrous purified sucrose 1.49 Gm. CAUTION: *This ampule is a hospital package and represents ten doses of 0.04 Gm. each.*

Ampoules Mapharsen 0.6 Gm.: Each ampule contains mapharsen 0.6 Gm., anhydrous sodium carbonate 0.16 Gm. and anhydrous purified sucrose 2.24 Gm. CAUTION: *This ampule is a hospital package and represents ten doses of 0.06 Gm. each.*

Mapharsen occurs as a white amorphous, odorless powder. It is soluble in water, alcohols, acids, alkalis and alkali carbonates. The aqueous solution is acid to methyl red but alkaline to congo red.

Add 0.5 Gm. of sodium hydrosulfite to about 0.1 Gm. of mapharsen dissolved in 10 cc. of water; a yellow precipitate separates. Add sodium carbonate solution drop by drop to a 1 per cent aqueous solution of mapharsen: no precipitate is formed *(distinction from arsphenamine).* Add diluted hydrochloric acid to a 1 per cent aqueous solution of mapharsen: no precipitate is formed *(distinction from neoarsphenamine).*

Add 2 cc. of colorless 20 per cent hydriodic acid to about 0.02 Gm. of mapharsen: a color not deeper than a lemon yellow is produced *(3 amino 4 hydroxy phenyl arsonic acid).*

Transfer about 0.15 Gm. of mapharsen accurately weighed to a wide mouth weighing bottle and dry to constant weight in a vacuum desiccator over phosphorus pentoxide: the sample loses not more than 2 per cent.

Dissolve about 0.1 Gm. of mapharsen accurately weighed in 25 cc. of distilled water, titrate with tenth normal iodine solution using a starch indicator: the trivalent arsenic is not less than 28.2 per cent nor more than 29.5 per cent.

Dissolve about 0.2 Gm. of mapharsen accurately weighed in 5 cc. of sulfuric acid in a 250 cc. Erlenmeyer flask, add 1 cc. of nitric acid, heat on the hot plate for an hour, add 1 cc. of nitric acid, heat on the hot plate until the solution is clear and colorless; cool, add 10 cc. of water, heat on the hot plate until white fumes appear; cool, transfer to a 600 cc. beaker, dilute to about 100 cc., make the solution alkaline to litmus paper by adding stronger ammonia water, add stronger ammonia to the amount of one third of the volume, add 20 cc. of ammonium chloride and 25 cc. of magnesia mixture. Allow to stand over night, collect the precipitate in a tared gooch crucible, wash the precipitate with dilute ammonia water (1 volume of stronger ammonia water with 2 volumes of water) dry at 100 C., heat in a muffle furnace at 400 C. for four hours, then gradually raise the temperature to 800 C.; cool in a desiccator and weigh: the arsenic calculated on the dry basis is less than 30 per cent.

Dissolve about 0.1 Gm. of mapharsen accurately weighed in about 25 cc. of distilled water; titrate to the green color of brom thymol blue with tenth normal sodium hydroxide solution: the hydrogen chloride calculated on the dry basis is not less than 14.0 per cent nor more than 14.7 per cent.

IPRAL SODIUM (See THE JOURNAL, June 1, 1935, p. 1999; also Nov. 30, 1935, p. 1772).

The following dosage forms have been accepted:

Capsules Ipral Sodium, 2 grains.

Ipral-Amidopyrine Tablets, 4.33 grains: Each tablet contains ipral (ethylisopropyl-barbituric acid) 2 grains, and amidopyrine 2.33 grains.

SQUIBB STABILIZED HALIBUT-LIVER OIL (See New and Nonofficial Remedies 1935, p. 300).

The following dosage forms have been accepted:

Squibb Cod-Halibut Liver Oil: A blend of oils from the livers of the cod and the halibut in such proportions that the finished product has a vitamin potency of not less than 4,200 vitamin A units (U. S. P. XI) per gram and 700 vitamin D units (U. S. P. XI) per gram.

ANTIDYSENTERIC SERUM (See New and Nonofficial Remedies, 1935, p. 375).

Lederle Laboratories, Inc., Pearl River, N. Y.

Antidysenteric Serum (Polyvalent) (See New and Nonofficial Remedies, 1935, p. 375).—Marketed in vials containing 20 cc.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

1. FAULTLESS BRAND CRYSTAL WHITE SYRUP
2. JACK SPRAT BRAND CRYSTAL WHITE SYRUP
3. MARSHALL BRAND CRYSTAL WHITE SYRUP
4. UNCLE WILLIAM BRAND CRYSTAL WHITE SYRUP

Distributors.—2. Jack Sprat Foods, Inc., Marshalltown, Iowa. 3 and 4. Marshall Canning Company, Marshalltown, Iowa.

Packer.—Marshall Canning Company, Marshalltown, Iowa.

Description.—Table syrup; corn syrup sweetened with sucrose.

Manufacture.—Corn syrup and sucrose syrup are mixed, heated and packed as described for Faultless Brand Golden Syrup (THE JOURNAL, Nov. 30, 1935, p. 1773).

Analysis (Submitted by packer).—

	per cent
Moisture	25.5
Total solids	74.5
Ash	0.3
Fat (ether extract)	0.0
Protein (N × 6.25)	0.04
Reducing sugars as dextrose	36.5
Sucrose (copper reduction method)	16.6
Dextrins (by difference)	21.1

(No methods are available for accurately determining the composition of syrups of this nature; therefore the foregoing analysis is roughly approximate.)

Calories.—3 per gram; 85 per ounce.

Claims of Packer.—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding, and as a syrup for cooking, baking and the table.

SKIPPY IMPROVED PEANUT BUTTER (OIL MODIFIED BY HYDROGENATION)

Manufacturer.—Rose Field Packing Company, Ltd., Alameda, Calif.

Description.—Peanut butter, the oil of which has been hydrogenated; seasoned with salt.

Manufacture.—Peanuts are roasted, cooled, mechanically treated to remove the embryo and red skin and inspected to remove any foreign matter or defective nuts. A definite percentage of the oil is expressed, which is neutralized, deodorized and hydrogenated. The resultant peanut cake from the oil press is ground, mixed with the hydrogenated peanut oil and salt, ground, and automatically filled into cans.

Analysis (submitted by manufacturer).—

	per cent
Moisture	0.4
Total solids	99.6
Ash	3.1
Fat (ether extract)	49.1
Free fatty acids (as oleic acid)	0.3
Protein (N × 6.25)	30.8
Reducing sugars as invert sugar	0.0
Sucrose	4.4
Crude fiber	.9
Carbohydrates other than crude fiber (by difference)	11.3

Calories.—6.3 per gram; 179 per ounce.

Claims of Manufacturer.—The peanut oil content will not separate.

HAWAIIAN PINEAPPLE

(1) FALL LEAF BRAND SLICED, TIDBITS, AND CRUSHED

(2) HALE'S PRIDE BRAND LUMPS-O'GOLD

(3) RADIO BRAND CRUSHED AND SLICED

(4) SUPREME COURT BRAND CRUSHED AND SLICED

(5) W G Y BRAND CRUSHED, SLICED AND TIDBITS

Distributors.—(1) Henry Soodsma & Co., Paterson, N. J.; (2) Hale-Halsell Company, McAlester, Okla.; (3) M. J. Caplan Co., Inc., Lawrence, Mass.; (4) The W. H. Dunne Company, Norwich, N. Y.; (5) Jonathan Levi Co., Inc., Schenectady, N. Y.

Packer.—Hawaiian Pineapple Company, Ltd., San Francisco.

Description.—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole canned pineapple (THE JOURNAL, April 8, 1933, p. 1106).

KRIM-KO CHOCOLATE FLAVORED DRINK

Bottlers and Distributors.—

Avondale Farms, Knoxville, Tenn.
Beaver Dam Dairy Co., Beaver Dam, Wis.
M. Brenner, Inc., Poughkeepsie, N. Y.
Capitol Dairies, Inc., Indianapolis.
Donegan Certified Dairy, Largo, Fla.
Gear Dairy Company, Menasha, Wis.
Greenville Sanitary Dairy, Greenville, S. C.
Gustafson Ice Cream and Dairy Company, Rice Lake, Wis.
Little Dairy, Hanovia, Pa.
Marion Pure Milk Company, Marion, Ind.
Mid-West Dairy, Benton, Ill.
Model Milk and Ice Cream Co., Terre Haute, Ind.
Powell Dairy Company, Meadville, Pa.
Quality Dairy, Booneville, Ind.
Reading Dairy, Reading, Pa.
Rushing's Dairy, Du Quoin, Ill.
Sagal-Lou Farm, Branford, Conn.
E. W. Seiberg Co., Jamestown, N. Y.
Square Deal Dairy, Willard, Ohio.

Licenser.—Krim-Ko Company, Chicago, manufactures the Krim-Ko Chocolate Flavored Drink Base and licenses its use, the name Krim-Ko, and standard advertising under definite contract conditions.

Description.—Pasteurized chocolate flavored sweetened skim milk; contains skim milk (from 0.5 to 1.5 per cent milk fat), sucrose, chocolate and cocoa, tapioca flour, salt and traces of tartaric acid and agar; flavored with imitation vanilla, vanillin and coumarin. See Krim-Ko Chocolate Flavored Drink (THE JOURNAL, June 30, 1934, p. 2187).

CELLU BLACK RASPBERRIES PACKED IN WATER WITHOUT ADDED SUGAR OR SALT

Distributor.—The Chicago Dietetic Supply House, Inc., Chicago.

Packer.—Eugene Fruit Growers Association, Eugene, Ore.

Description.—Canned cooked black raspberries packed in water without added sugar or salt.

Manufacture.—The method of manufacture is essentially the same as for Cellu Blackberries Packed in Water Without Added Sugar or Salt (THE JOURNAL, September 28, 1935, p. 1039).

Analysis (submitted by distributor).—

	per cent
Moisture	84.9
Total solids	15.1
Ash	0.6
Fat (ether extract)	1.1
Protein (N × 6.25)	1.1
Reducing sugars as invert sugar	5.1
Sucrose	0.6
Crude fiber	3.3
Carbohydrates other than crude fiber (by difference)	9.0

Calories.—0.5 per gram; 14 per ounce.

Claims of Distributor.—For diets in which sweetened fruit is proscribed.

HERSHEY'S MILD AND MELLOW MILK CHOCOLATE

Manufacturer.—Hershey Chocolate Corporation, Hershey, Pa.

Distributor.—Chocolate Sales Corporation, Hershey, Pa.

Description.—Milk chocolate, containing sugar, cacao butter, milk and chocolate.

Manufacture.—The method of preparation is the same as described for Hershey's Milk Chocolate (THE JOURNAL, Feb. 24, 1934, p. 606).

Analysis (submitted by manufacturer).—

	per cent	Moisture-, sugar- and fat-free basis, per cent
Moisture	0.5	
Ash	1.4	6.2
Ash insoluble in water	1.1	
Ash insoluble in acid	0.01	
Fat (ether extract)	33.6	
Cacao fat	27.8	
Milk fat	5.8	
Total nitrogen	1.2	
Protein (noncaffeine and nontheobromine N × 6.25)	7.3	
Casein	4.3	
Sucrose	46.4	
Lactose	7.7	
Whole milk solids (estimated)	19.8	
Crude fiber	0.3	5.9
Carbohydrates other than crude fiber (by difference)	56.8	
*Theobromine	0.12	
*Caffeine	0.01	

* By Prochnow's modification of the Beckurts-Fromme method, Arch. d. Pharmaz. **247**: 698, 1910.

Calories.—5.6 per gram; 159 per ounce.

Claims of Manufacturer.—Complies with respective United States Department of Agriculture definition and standard.

DROMEDARY BRAND GRAPEFRUIT JUICE

Manufacturer.—The Hills Brothers Company, New York.

Description.—Pasteurized Florida grapefruit juice, unsweetened. The method of manufacture is essentially the same as described for Dromedary Grapefruit Juice—Sugar Syrup Added (THE JOURNAL, Dec. 22, 1934, p. 1949), with the exception that no sugar syrup is added.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 18, 1936

COMPARATIVE GEOGRAPHY OF THYROTOXICOSIS

The geographic distribution of endemic goiter has been carefully charted, with resulting clarification of our concepts of the etiology. The study of thyrotoxicosis from this point of view has been comparatively neglected in the past, except for some incomplete observations. Möbius[1] thought that exophthalmic goiter is common in coastal regions and expressed an interest in its relation to goiter areas, though he felt that it was relatively more common in goiter free zones. Murray[2] reported that exophthalmic goiter is more common in the north of England than in the south and is relatively more prevalent where goiter is endemic. McCarrison[3] expressed the opposite view: "Graves disease is stated to be more common at the sea coast than in inland tracts, but this is an impression only and is not based on extensive statistical research. It is very rare in regions where goiter is endemic." The first extensive studies on the geographic relation of exophthalmic goiter were reported in the United States by Crotti,[4] who reported the incidence in 2,510,791 soldiers drafted from the entire country. In this group there were 8,647 cases of exophthalmic goiter. Crotti found that the Southern states were comparatively free from goiter but that the disease was more prevalent in the Northern states, especially in the Eastern industrial areas. He reported that exophthalmic goiter was closely associated with the distribution of simple goiter. Among the Finns, Scandinavians and Russians, simple and exophthalmic goiter were most prevalent in the order given. Darker races were found to have only a slight tendency to the disease; Negroes showed the least predisposition. McClendon and Hathaway,[5] on statistical study, decided that thyrotoxicosis in the United States is due to iodine starvation and agreed in distribution with the zones of endemic goiter.

In 1919 Kocher[6] wrote that exophthalmic goiter is rare in goiter endemic zones. He further noted that thyrotoxicosis is rarer in primitive peoples than among civilized peoples. Müller[7] reported exophthalmic goiter quite rare in the center of the Swiss endemic zone, in southern Germany and in the goitrous regions of Holland. Feldman,[8] describing endemic goiter in the northern German plains, found thyrotoxicosis quite prevalent where there was endemic goiter. Vomela,[9] who studied thyroid disease in Moravia (in the Carpathians), found hyperthyroidism and exophthalmic goiter endemic. In the Carpathian highlands he found endemic hypothyroidism; in the plains he noted endemic hyperthyroidism. Persons who traveled from one to the other region were rapidly influenced by change of locality and developed a thyroid condition characteristic of the new location. Arndt[10] reported that in Russia exophthalmic goiter occurs in goiter free areas. On the contrary, Adlercreutz found that in Finland there was no typical regional distribution of thyrotoxicosis. Aschoff[11] studied conditions in Japan, where he found ordinary goiter rare; but exophthalmic goiter was more common, particularly among men.

It is apparent that there are conflicting views on the geographic distribution of thyrotoxicosis and its correlation with endemic goiter. For this reason Sällström's[12] recent detailed study of the geographic relations of thyrotoxicosis in Sweden is an important contribution toward a better understanding of this problem. This monograph is based on a thorough statistical study of 5,450 thyrotoxic patients admitted to Swedish hospitals in the period 1925-1932. There were 4,950 women and 500 men in this series. Thyrotoxicosis occurred at all ages from 9 months to 70 years, though it was most prevalent in the third decade. In 67 per cent of these patients goiter had been present more than ten years without symptoms. In general there was a greater incidence of thyrotoxicosis in urban than in rural communities. A specific localization was found for nodular toxic goiter, which did not agree with the distribution of endemic goiter or with that of thyrotoxicosis. Severe thyrotoxicosis with exophthalmos showed a higher incidence in regions with slight goiter tendencies. On the contrary, severe thyrotoxicosis without exophthalmos was found to be distributed uniformly over the entire country. In endemic goiter zones, thyrotoxicosis occurred in mild form. In Kopparberg, which has the greatest amount of goiter in Sweden, there was only a slight incidence of thyrotoxicosis. Värmland, where

1. Möbius, P. F.: Basedow Krankheit, in Nothnagel's Handbuch, 1896, quoted by Sällström.[12]
2. Murray, quoted by Sällström.[12]
3. McCarrison, Robert: The Thyroid Gland in Health and Disease, London, Baillière, Tindall & Cox, 1917, p. 195.
4. Crotti, André: Thyroid and Thymus, Lea & Febiger, 1922, p. 245.
5. McClendon, J. F., and Hathaway, J. C.: Inverse Relation Between Iodine in Food and Drink and Goiter, Simple and Exophthalmic, J. A. M. A. **82**: 1668 (May 24) 1924.
6. Kocher, Albert, in Kraus, Friedrich, and Brugsch, Theodor: Spezielle Pathologie und Therapie, Berlin and Vienna, Urban & Schwarzenberg **11**: 182, 1927.
7. Müller, F.: Zur pathologische Physiologie der Schülddrüse, Ber. Internat. Kropf Konf. in Berne, 1927, p. 221.
8. Feldman, E.: Der endemische Kropf der Norddeutschen Tiefebene, Ber. Internat. Kropf Konf. in Berne, 1927, p. 90.
9. Vomela, S.: Sur le goitre exophthalmique endemique, Ann. de méd. **32**: 461, 1932.
10. Arndt, H. J.: Der Kropf in Russland, Veröffent. a. d. Gewerbe u. Konst. Path. **7**: 1931.
11. Aschoff, L.: Zur Kropf Frage in Japan, Virchows Arch. f. path. Anat. **254**: 841, 1925.
12. Sällström, T.: Vorkommen und Verbreitung der Thyrotoxicosis in Schweden, Stockholm, 1935.

there is a slight incidence of struma, has much thyrotoxicosis. On the coast of Norway there is no agreement in distribution of struma and thyrotoxicosis. Secondary thyrotoxicosis, as might be expected, occurred most frequently in regions with a high goiter incidence, while exophthalmic goiter was more prevalent in goiter poor areas. These contradictory reports of various investigators indicate that there are unknown factors in the pathogenesis of the different types of thyrotoxicosis. Sällström has suggested three possibilities in the correlation of thyrotoxicosis and endemic goiter in Sweden: that struma and thyrotoxicosis have the same distribution, that thyrotoxicosis is more common in goiter free areas, and that secondary hyperthyroidism is more prevalent in goiter areas. In relation to simple goiter, thyrotoxicosis is a comparatively rare disease, which occurs ten times more frequently in females than in males. Sällström has justly criticized Crotti's studies by pointing out that the latter considered only males. Could he have included an equally comprehensive study of thyrotoxicosis in women, Crotti probably would not have found such a simple agreement in distribution of simple goiter and thyrotoxicosis.

Among exogenous factors of a geographic nature, climate is significant in relation to its influence on thyrotoxicosis. Doche [13] reported that a maritime climate stimulates the endocrine glands, particularly the thyroid. Rowinski [14] thought that sea climate causes a hyperthyroid state particularly in patients with struma, presumably owing to the metabolic stimulation induced by iodine in the air at the sea coast. The seasons also have an effect on thyroid function. The highest blood iodine values occur in midsummer (June to August). In the observations of Sällström, no relation was noted between the radioactivity of the water and the incidence of thyrotoxicosis. A definite tendency was observed for the development of thyrotoxicosis in agglomerations of people about the industrial zones. In western Sweden the incidence of thyrotoxicosis was slight, whereas in eastern Sweden there was a relatively high incidence. It was observed in these studies that thyrotoxicosis is more prevalent in areas of a continental climate than in areas with a maritime climate. This is corroborated by Crotti's report that thyrotoxicosis is more prevalent in the Northern states, which have a continental type of climate, than in the Southern and Eastern states, where a maritime climate prevails. The relative richness of iodine in a maritime zone and its comparative scarcity in a continental region may help to explain this peculiarity in distribution.

The study of the comparative geographic distribution of a disease is rendered obscure because of the very multiplicity of factors included, such as climate, geographic locality, season, local water supply, meteorological conditions such as temperature and humidity as well as the variations in physical constitution of different human stocks living in various regions. Since any or all of these factors may exert an influence on the pathogenesis of thyrotoxicosis, it is suggested that future studies in this field be limited to the effect of one or another geographic factor with relation to a definite type of thyrotoxicosis in one type of human stock, if possible. In conclusion, it is of interest that Sällström observed no correlation between the incidence of thyrotoxicosis and endemic goiter. There was noted a greater incidence of struma in families with thyrotoxicosis than in the general population affected with struma. This indicates the importance of a constitutional predisposition.

13. Doche, J.: Del'influence du climate marin sur les sécrétions internes, Rev. gén. de clin. et de thérap. **26**: 261, 1912.

14. Rowinski, P.: Influenza del clima marino e dei bagui di mare sul ricambio basale, Minerva med. **2**: 79, 1931.

PROTAMINE INSULINATE

One of the major difficulties of endocrine substitution therapy is the duplication of the effects of continuous secretion by intermittent administration. The consequences of underdosage and overdosage are particularly rapid and striking with insulin; this problem is therefore most important in the treatment of diabetes. While the majority of patients are able to adjust their carbohydrate metabolism satisfactorily by the injection of insulin several times a day, many patients with diabetes have so delicately balanced an equilibrium that it is readily disorganized by slight overdosage or underdosage of insulin; wide fluctuations in blood sugar occur in these patients. The solution of this problem seems to lie in devising either a new method of administration or a new form of insulin which, when injected, would more nearly approximate the natural continuous secretion of this substance. A number of attempts have been made to solve this problem, none entirely successful. Important progress in this direction has now been made by Hagedorn and his collaborators at the Steno Memorial Hospital in Copenhagen; their communication and a confirmatory article by Root and his associates of Boston appear elsewhere in this issue.[1] The Danish investigators have combined insulin with protamines (elementary compounds of amino acids containing one or more of the substances lysine, arginine and histidine). These new insulin compounds have an iso-electric point (p_H of minimum solubility) approaching the p_H of body tissues. Injected protamine insulinate, being relatively insoluble, tends to be absorbed slowly and over a relatively longer time than ordinary insulin; the blood sugar lowering effect lasts about twice as long. Patients with severe diabetes have been enabled to avoid to a large extent the marked fluctuations in blood sugar and hence the insulin reactions that sometimes characterize treatment with insulin alone.

1. Hagedorn, H. C.; Jensen, B. N.; Krarup, N. B., and Wodstrup, I.: Protamine Insulinate, this issue, p. 177. Root, H. F.; White, Priscilla; Marble, Alexander, and Stotz, E. H.: Clinical Experience with Protamine Insulinate, p. 180.

Protamine insulinate (insulin retard) opens the door for fresh studies in the treatment of diabetes. With it the blood sugar can be kept more nearly normal and any advantages that can occur from this fact ought to show within a few years. Already it is known that the diabetic patient who is carefully treated is the one who lives longest and is most free from complications. Can the diabetic patient with blood sugar controlled throughout the twenty-four hours do better still? The new insulin in its present form demands more intelligence in its use, it works too slowly for coma and too slowly to overcome the hyperglycemia of a large meal, and it has the disadvantage of not being stable for more than a few weeks. When properly employed it will replace the customary high fasting blood sugar of the diabetic patient with a normal blood sugar. Perhaps the wise patient with diabetes will employ the quickly acting old insulin in the morning with a heavy breakfast and the slowly acting new insulin at night before a light dinner, as Dr. Hagedorn's patients have done.

This undoubtedly represents an important advance in the treatment of diabetes; it should be emphasized, however, that protamine insulinate is still a laboratory preparation and is not yet commercially available in this country. The compound must be prepared shortly before use, as it is stable at most for only a few weeks. It does not supplant ordinary insulin but serves as an adjunct to the latter; the two must usually be used in the same patient at different times of the day. Hagedorn and his associates point out that protamine insulinate is of no special value in those patients who are now adequately treated with insulin. But for those patients whose diabetes cannot be controlled satisfactorily with insulin alone, protamine insulinate is a valuable contribution—indeed the most valuable since the original discovery of insulin by the Toronto group.

PIGMENTATION, SUNLIGHT AND NUTRITION

The deeply pigmented races, such as the Negroes and certain brown races, are concentrated in the tropical regions, while the less deeply pigmented and white races "live native" only in the temperate zones. Dark races do not thrive in colder climates and the successful colonization of white races in the tropics has not yet been accomplished.

A number of hypotheses have been proposed to explain the phenomenon of racial distribution. One of these, which has been discussed recently,[1] places emphasis on the importance of sunlight as related to nutrition, specifically vitamin D. The deeply pigmented race, it is pointed out, is limited chiefly to the equatorial zone because, on migrating toward the poles where the amount and physiologic activity of sunlight progressively decrease, the skin pigment unduly lessens the amount of vitamin D normally produced in the organism by the solar radiation of sterols. As a result, rickets and deformities of the bones appear. The peculiar susceptibility of Negro babies in this country to rickets is a familiar example. In time, bone malformation also includes the pelvis of the female, thus interfering with reproduction. Eventually the race must become extinct unless there is a remigration to a more sunny region, a compensatory decrease in the amount of skin pigmentation, or the inclusion in the diet of substances especially rich in vitamin D. Apparently, the ability of the pigmented Eskimo to exist in the polar regions is due to the latter type of compensation in the form of ingestion of the livers and certain other organs rich in vitamin D from fish and other food animals.

The question of the inability of the white race to inhabit successfully the equatorial zone is perhaps more difficult to explain on a nutritional basis despite the fact that the dominance of the pigmented races in the tropics is more striking than that of the fair races in colder regions. It has been stated[1] that a nutritional disease factor related to the excessive sunlight may be involved and that this may give rise to the neurasthenias so frequently observed in white inhabitants of the tropics. Or it is possible that toxic effects from photosensitization to some substance may be involved. Whatever may be the ultimate explanation, the pigment of the skin appears to serve in some way as a protective device without which the continued propagation of a race is not possible in regions of excessive sunlight.

1. Murray, F. G.: Pigmentation, Sunlight and Nutritional Disease, American Anthropologist **36**: 438 (July-Sept.) 1934.

Current Comment

ALUMINUM IN FOOD

Propaganda as to possible dangers resulting from the use of aluminum cooking vessels is so persistent that one suspects ulterior motives in its background. The problem has been investigated at various times, and in the presence of a renewed criticism of the widespread employment of aluminum vessels another recent study of the subject has appeared under the auspices of the British Ministry of Health.[1] The accurate determination of aluminum in food and biologic material, according to Monier-Williams, who wrote the report, is a difficult matter. The amount usually present is small and cannot easily be separated completely from iron and other metals. The method that has finally been adopted depends on the precipitation by 8-hydroxyquinoline and, although considerably longer than some of the colorimetric methods, has the advantages that it is applicable over a wide range of aluminum content and that the aluminum is obtained in a form in which it can be weighed or titrated. The figures for the amount of metal taken up by food from aluminum vessels vary considerably, owing to different conditions of experiment. Distilled water, whether hot or cold, has almost no action. Hard waters, however, corrode aluminum

1. Monier-Williams, G. W.: Aluminum in Food, Report 78 on Public Health and Medical Subjects, London, Ministry of Health, 1935.

slightly and the same is true of organic acids. Aluminum is readily acted on by alkalis, and cooking utensils are therefore liable to be damaged if cleaned too often with soda. The problem of whether or not aluminum is injurious in moderate doses involves a number of different questions. It is probable that a considerable proportion taken into the stomach is soluble. Whether it can diffuse through the walls of the intestinal tract and get into the blood is a matter of further controversy, and at present judgment on this matter must be suspended. Aluminum salts in doses that are not unreasonably high have been shown to have some action on digestive processes. There is no convincing evidence, however, that aluminum in the amounts in which it is likely to be consumed as a result of the use of aluminum utensils has a harmful effect on the ordinary consumer.

Association News

THE KANSAS CITY SESSION

Applications for Space in the Scientific Exhibit

Attention is called to the fact that applications for space in the Scientific Exhibit at the Kansas City Session close on January 27. The Committee on Scientific Exhibit requires that all applications be made out on the regulation blanks.

Information and application blanks may be obtained from the Director, Scientific Exhibit, American Medical Association, 535 North Dearbon Street, Chicago.

APPOINTMENT

Dr. P. A. Teschner of Milwaukee has been appointed assistant director of the American Medical Association Bureau of Health and Public Instruction. This is a newly created position to take care of the expanding work of the Bureau. Dr. Teschner is a native of Wisconsin. He is a member of the Milwaukee County Medical Society and the State Medical Society of Wisconsin. He has been serving since 1926 as a member of the medical staff of the Wisconsin Anti-Tuberculosis Association.

RADIO BROADCASTS

The American Medical Association broadcasts over WEAF, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers a toast: "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

Red Network.—The stations on the Red network of the National Broadcasting Company are WEAF, WEEI, WTIC, WJAR, WTAG, WCSH, KYW, WFBR, WRC, WGY, WBEN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF.

Pacific Network.—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR.

The next three programs are as follows:

January 21. Scarlet Fever, Morris Fishbein, M.D.
January 28. Health of the Traveler, W. W. Bauer, M.D.
February 4. Pneumonia, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

First Conference of State Secretaries.—The first annual conference of secretaries of Arkansas county medical societies was held at the Hotel Marion, Little Rock, January 6. In addition to talks by Drs. Melvin E. McCaskill, president of the state medical society, and Lee V. Parmley, chairman of the legislative committee, the following program was presented:

Dr. Darmon A. Rhinehart, Little Rock, Value of a Public Relations Committee in a County Medical Society.
Dr. Rufus B. Robins, Camden, Arranging the County Society Program.
Dr. Albert B. Dickey, Prescott, How the Arkansas Medical Society May Help the County Societies.
Drs. Flem D. Smith, Blytheville, and Jordan L. Roberts, Nashville, This Matter of Collecting Dues.
Dr. Gaston A. Hebert, Hot Springs National Park, Social Gathering of the County Medical Society.
Dr. Arthur M. Gibbs, Hamburg, Value of Combining County Medical Societies for Scientific Programs.

Dr. Olin West, Secretary and General Manager, American Medical Association, Chicago, addressed the meeting.

Society News.—At a meeting of the Eighth Councilor District Medical Society, Little Rock, December 4, the speakers included, among others, Drs. Dewell Gann Jr., on "Surgery As an Art"; Francis W. Carruthers, "Diagnosis and Treatment of Vascular Diseases of the Extremities," and Darmon A. Rhinehart, "X-Ray Treatment of Epithelioma of the Skin." The morning was given over to clinics.——Dr. John M. Smith, Russellville, addressed the Faulkner County Medical Society, November 21, on "Surgery of Abdominal Tumors."——Drs. Roland H. Klemme and Benjamin F. Turner, St. Louis and Memphis, discussed head and birth injuries, respectively, before the Craighead-Poinsett County Medical Society in Jonesboro, December 12.——Dr. C. J. Fishman, Oklahoma City, addressed the Sebastian County Medical Society, December 10, on "Uses and Abuses of Roentgenology in Internal Medicine."——At a meeting of the White County Medical Society, December 5, Dr. Wallace R. Richardson, Little Rock, spoke on intestinal obstruction.—— Dr. John S. Wilson, Monticello, led a symposium on the common cold before the Southeast Arkansas Medical Society in Monticello, December 16.

CALIFORNIA

Poliomyelitis Vaccines Prohibited.—The use of vaccines or other similar immunizing agents to protect human beings against acute anterior poliomyelitis is prohibited in the city and county of San Francisco by an order issued by the director of public health, Dr. Jacob C. Geiger, December 27. In the order, Dr. Geiger stated that he believed the action was indicated and appropriate as a public health measure directed at the control of a communicable disease, particularly because recent evidence supports the premise that acute anterior poliomyelitis occurs with a greater frequency in those "immunized" than in those not "immunized" in comparable population age groups under comparable conditions.

In Commemoration of Dr. Crummer.—A room containing historical material has been set aside at the University of California Medical School in honor of the late Dr. Leroy Crummer, Los Angeles, who inaugurated systematic instruction in medical history in the school. The exhibit includes Dr. Crummer's library and donations by physicians. A field medical kit used during the Franco-Prussian war, a set of instruments used by Dr. Beverly Cole, one of the founders of the medical school, and two microscopes dating from the seventeenth century are among the surgical devices shown. The oldest book in the collection is a Gerson of 1472, one of the earliest medical classics. Dr. Crummer, who died in 1934, was clinical professor of medical history and bibliography at the medical school and professor of the history of medicine, University of Southern California School of Medicine.

COLORADO

Health at Denver.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended January 4, indicate that the highest mortality rate (29.9) appears for Denver and the rate for the group of cities as a whole, 13.8. The mortality rate for Denver for the corresponding period last year was 17 and for the group of cities, 13.5. Caution should

be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

DELAWARE

Society News.—Dr. Julian Johnson, Philadelphia, addressed the New Castle County Medical Society, recently, in Wilmington, on "Management of Diseases of the Thyroid Gland." Dr. Alexander Randall, Philadelphia, discussed the diagnosis and treatment of urinary calculus before the society, recently.

DISTRICT OF COLUMBIA

University News.—Dr. Thomas M. Rivers of the Rockefeller Institute for Medical Research, New York, gave the third lecture in the Smith-Reed-Russell series at the George Washington University School of Medicine, December 10, on "Filtrable Virus Diseases of the Central Nervous System."

Medical Bills in Congress.—*Change in Status:* S. 3284 has been reported to the Senate with the recommendation that it pass, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue, without examination, a license to practice the healing art to Dr. Dexter P. Reynolds (S. Rept. No. 1464). *Bills Introduced:* S. 3513, introduced by Senator King, Utah, and H. R. 9279, introduced (by request) by Representative Norton, New Jersey, propose to regulate the sale, in the District of Columbia, of barbital or any other hypnotic or somnifacient drug. S. 3514, introduced by Senator King, Utah, and H. R. 9278, introduced (by request) by Representative Norton, New Jersey, propose to regulate, in the District of Columbia, the manufacturing, dispensing, selling and possession of narcotic drugs. While these bills purport to enact the "uniform narcotic drug act," they vary in important details from the model uniform state narcotic act formulated by the National Conference of Commissioners on Uniform State Laws, and approved by the American Bar Association and the American Medical Association. The pending bills define "physician" specifically to include an osteopath and a "hospital" to include "dental and medical clinics." They bring within their terms apomorphine, specifically excluded from the model bill. The sections in the bills dealing with exempt preparations may facilitate the abuse of the use of such preparations. The bills deny to the courts any jurisdiction to revoke the license of convicted persons, and the enforcement provision may make uncertain adequate enforcement.

ILLINOIS

Health Promotion Week.—The Illinois State Department of Health announces that Health Promotion Week will be observed April 26-May 1.

Smallpox in the Suburbs.—With several cases of smallpox under quarantine, health officials of Maywood, Melrose Park, Bellwood and Forest Park are cooperating in an immunization campaign. Sixteen cases were reported in Maywood, January 9, sixteen in Bellwood and three each in Forest Park and Melrose Park. While schools are not to be closed, health officials are advising the exclusion of unvaccinated children from school for sixteen days. Some factories in Maywood have arranged for vaccination of their employees.

Society News.—At a meeting of the Sangamon County Medical Society in Springfield, January 2, Dr. Herbert B. Henkel discussed "Symptoms and Diagnosis of Common Urologic Conditions"; Emmet F. Pearson, "Minor and Borderline Manifestations of Allergy," and Herman H. Tuttle, present-day health problems.——Dr. Arthur E. Hertzler, Halstead, Kan., discussed "Benign Diseases of the Stomach" before the Peoria City Medical Society, January 7.——Dr. Archibald L. Hoyne, Chicago, discussed "Newer Methods of Prophylaxis and Treatment in Contagious Diseases" before the Winnebago County Medical Society in Rockford, December 20.——Dr. Eugene F. Traut, Chicago, discussed "Etiology and Treatment of Arthritis" before the DuPage County Medical Society in Elmhurst, December 18.

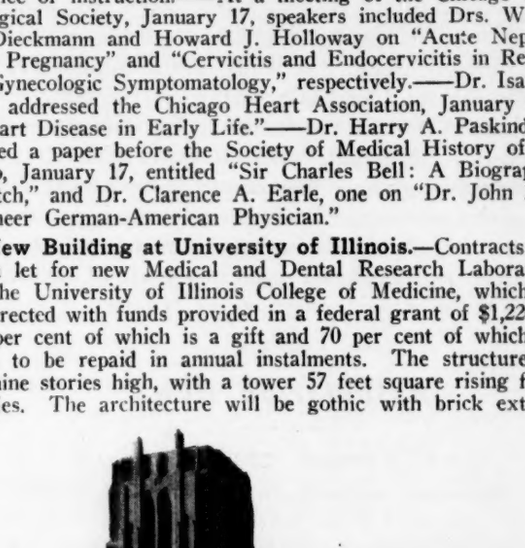
Chicago

Hobby Exhibit.—The program committee of the Chicago Medical Society has designated the evening of April 1 "doctors' recreation night." Physicians are urged to submit samples of their hobbies for an exhibit.

Reward for Capture of Physician's Slayer.—The North Shore branch of the Chicago Medical Society offered a reward, January 10, for the capture and conviction of the person or persons who murdered Dr. Silber C. Peacock, January 2. Dr. Peacock was lured from his home by a telephone call to visit a sick child.

Society News.—Dr. Peter Bassoe was chosen president of the Institute of Medicine of Chicago at the recent annual meeting. Harold F. McCormick and Albert A. Sprague were elected to citizen fellowship, an honor conferred on laymen who have contributed materially to the welfare of the community in medicine, dentistry, nursing, public health, social service or instruction.——At a meeting of the Chicago Gynecological Society, January 17, speakers included Drs. William J. Dieckmann and Howard J. Holloway on "Acute Nephritis and Pregnancy" and "Cervicitis and Endocervicitis in Relation to Gynecologic Symptomatology," respectively.——Dr. Isaac A. Abt addressed the Chicago Heart Association, January 7, on "Heart Disease in Early Life."——Dr. Harry A. Paskind presented a paper before the Society of Medical History of Chicago, January 17, entitled "Sir Charles Bell: A Biographical Sketch," and Dr. Clarence A. Earle, one on "Dr. John Zahn, Pioneer German-American Physician."

New Building at University of Illinois.—Contracts have been let for new Medical and Dental Research Laboratories of the University of Illinois College of Medicine, which will be erected with funds provided in a federal grant of $1,220,000, 30 per cent of which is a gift and 70 per cent of which is a loan to be repaid in annual instalments. The structure will be nine stories high, with a tower 57 feet square rising fifteen stories. The architecture will be gothic with brick exterior.



Proposed Medical and Dental Research Laboratories.

The new unit will contain the departments of public health, bacteriology and pathology of the college of medicine and will provide additional research space for other departments. The college of dentistry also will be in the new building.

IOWA

Society News.—A symposium on nonspecific ulcerative colitis was presented at the meeting of the Des Moines Academy of Medicine and the Polk County Medical Society, December 17, with Drs. Lee E. Rosebrook, Conan J. Peisen and Nevin Boyd Anderson as the speakers. Dr. Harry E. Kleinschmidt, New York, discussed tuberculosis before the meeting, November 26, and Dr. Arthur W. Erskine, Cedar Rapids, reviewed a tuberculosis survey in Linn County.——Dr. Edward A. Schumann, Philadelphia, will present a paper before the Linn County Medical Society, February 6, in Cedar Rapids.

KENTUCKY

Summary of Poliomyelitis Epidemic.—From Jan. 1 to Nov. 1, 1935, the state board of health recorded 308 cases of poliomyelitis in Kentucky, the period of greatest prevalence being from July to November. Twenty-five deaths occurred, a fatality rate of 8.3. The age group in which most cases occurred was that of children under 5 years, 137. Seventeen deaths were in this group. Fourteen cases were in adults, with no deaths. About 67 per cent of those who recovered showed some degree of paralysis. The highest incidence was in Louisville and Jefferson County and in a group of counties southwest of Louisville including Bullitt, Nelson, Hart, Barren, Edmondson, Grayson, Breckenridge, Warren, Logan, Muhlenberg, Hopkins and Daviess counties.

MARYLAND

Dr. Clark Awarded Chemists' Medal.—William Mansfield Clark, Ph.D., professor of physiological chemistry, Johns Hopkins University School of Medicine, Baltimore, has been awarded the William H. Nichols Medal of the New York section of the American Chemical Society for 1936, "for researches of incalculable value to human welfare." The medal will be presented to Dr. Clark at a dinner meeting of the New York section, March 6, with Donald D. Van Slyke, Ph.D., of the Rockefeller Institute and Albert Baird Hastings, Ph.D., Harvard Medical School, Boston, as the speakers. Prof. Arthur W. Hixson of Columbia University, chairman of the jury of award, will deliver the annual Nichols Medal address. Dr. Clark received his degree of doctor of philosophy from Johns Hopkins in 1910. He was research chemist with the dairy division of the U. S. Department of Agriculture from 1910 to 1920 and for several years chief of the division of Chemistry at the Hygienic Laboratory, U. S. Public Health Service. In 1927 he became DeLamar professor of physiological chemistry at Johns Hopkins University School of Medicine. His work has dealt with metabolism of bacteria, chemistry of milk and cheese, acid-base and oxidation-reduction equilibriums, and determination of hydrogen ions. In 1933 he was president of the Society of American Bacteriologists and the American Society of Biological Chemists.

MASSACHUSETTS

Society News.—Speakers before the Worcester District Medical Society in Worcester, January 8, were Drs. Benjamin T. Burley, on "Head Injuries—Types and Treatment"; Philip H. Cook, "Roentgen Diagnosis of the Abdominal Aorta," and Foster L. Vibber, "Treatment of Epileptics and Their Relatives."——Dr. John A. Kolmer, Philadelphia, discussed "Infection, Immunity and Vaccination in Infantile Paralysis" before the staff of St. Elizabeth's Hospital, Boston, January 3.——At a meeting of the New England Heart Association in Boston, January 6, Dr. Maurice E. A. Schnitker, among others, spoke on the question "Is Digitalis Present in Body Fluids in Digitalized Patients?"

Pneumonia Study Completed.—A four-year study of pneumonia in Massachusetts was recently terminated. The results of the study have been incorporated in a handbook on the serum treatment of pneumonia, now being prepared for publication by the Commonwealth Fund. Because the study showed physicians in general practice to be capable of obtaining satisfactory results from serum treatment of early type I and type II cases of pneumonia, the state department of public health has now taken over the cost of producing typing and therapeutic serums and is distributing them without charge to sixty cooperating laboratories in the state. The laboratories then distribute the serum without charge to physicians for patients who have been ill not longer than four days. The serum is a concentrated antipneumococcus serum, also known as Felton's antibody solution. In the Massachusetts study the fatality rate among persons with type I pneumonia treated with the serum was 10.1, while the rate for those treated without serum was 24.4. For patients with type II pneumonia treated with the serum the fatality rate was 26, while those receiving no serum showed a rate of 40.3. The death rate was found to be the lowest in cases in which treatment with serum was begun within the first seventy-two hours of illness. About four fifths of the patients were treated in hospitals and one fifth in their homes. The study was begun in 1931 with an annual grant for three years of $36,200 from the Commonwealth Fund and later extended for another year. Various laboratories in the state were chosen as pneumonia type determination stations and their technicians were trained at the expense of the study fund. A special advisory committee supervised the work, with Dr. Roderick Heffron as director (THE JOURNAL, Oct. 17, 1931, p. 1156, March 3, 1934, p. 704).

MICHIGAN

Dinner to Dr. Parmeter.—Dr. Rolland Parmeter, Detroit, was honored at a surprise dinner, December 4, given by members of the staff of Harper Hospital, celebrating his birthday and the completion of twenty-five years' service on the surgical staff of the hospital. Speakers included Drs. Thomas R. Gruber, Eloise, George Kamperman, Angus McLean, John Donald Mabley, Bror Hjalmar Larsson and Clark D. Brooks. Dr. Louis J. Hirschman acted as toastmaster.

Personal.—Dr. Angus McLean was honored with a testimonial dinner, January 9, given by the Detroit Academy of Surgery. Speakers were Drs. Raymond C. Andries and Wyman D. Barrett, who reviewed fifty years of surgical practice from a scientific and practical standpoint, respectively. Dr. McLean was the first president of the academy.——Dr. Abbott B. Mitchell, for the past four years head of the Allegan County health unit under the W. K. Kellogg Foundation, has resigned to become a member of the bureau of epidemiology of the state board of health.

County Secretaries' Conference.—The annual county secretaries' conference of the Michigan State Medical Society will be held at the Olds Hotel, Lansing, January 26. Dr. Earl I. Carr, president of the Ingham County Medical Society, will deliver the address of welcome. Speakers on the program will include:

Dr. Grover C. Penberthy, The State Society's Five Year Program.
Dr. Louis Fernald Foster, Bay City, Integration.
Dr. Howard H. Cummings, Ann Arbor, Do the People of Michigan Want a Guarantee for Good Medical Service?
Dr. Clyde C. Slemons, Grand Rapids, The Michigan Department of Health, the Social Security Act and the County Health Unit.
Dr. Henry Cook, Flint, The "Busyness" of the Michigan State Medical Society.

There will also be a round table discussion covering medical care of the indigent. Dr. Roscoe L. Sensenich, South Bend, president, Indiana State Medical Association, will address the dinner meeting on the socialization of medicine and the American Medical Association.

MINNESOTA

Society News.—Dr. Sumner L. S. Koch, Chicago, discussed "The Immediate and Late Treatment of Injuries of the Hand" before the Hennepin County Medical Society, Minneapolis, January 6, and Elias P. Lyon, LL.D., Minneapolis, January 8, "Impressions of Russian Science and Medicine."——Dr. Herbert M. Evans, Berkeley, Calif., gave a lecture at the Mayo Foundation, Rochester, January 13, entitled "Gonadotropic Function of the Pituitary."

Ginsberg Sentenced for Practicing Without License.—Hyman Ginsberg, alias Dr. Robert Clark, alias Dr. Hy Burgh, was convicted, July 11, 1935, of practicing healing without a basic science certificate and recently sentenced to a straight workhouse term of ten months. For some time Ginsberg had operated a barber shop at 125 Oak Grove, Minneapolis. A girl testified that Ginsberg made an examination, punctured her ear with a needle and obtained a specimen of blood allegedly to determine the condition of her health; she testified also that the defendant furnished her with capsules to treat her blood condition and gave her a hypodermic injection in the arm. The investigation disclosed that Ginsberg had repeatedly told patrons of his shop that he had studied medicine, and twenty prescriptions furnished by him were found in a drugstore in Minneapolis. Thirteen of these prescriptions were hand written and seven were telephoned. The name given in each case was "Dr. Bergman." Ginsberg admitted that in March 1932 he pleaded guilty in the district court of Hennepin county to having performed an abortion. This is the longest straight jail sentence ever imposed in Minnesota for violation of the basic science law, the state board reported.

MISSOURI

Society News.—At a meeting of the Kansas City Pathological Society, December 17, speakers included Dr. Ferdinand C. Helwig on "Sarcoma of the Spleen."——The Kansas City Southwestern Pediatric Society was addressed, December 12, by Drs. Paul E. Belknap, Topeka, on "Undulant Fever"; Urban J. Busiek, Springfield, "Appendicitis in Children," and Milo G. Sloo, Topeka, "Acrodynia."——The Buchanan County Medical Society was addressed by Dr. Samuel J. Freund, St. Joseph, recently, on "Diagnosis and Treatment of Meningitis."——At a meeting of the Cape Girardeau County Medical Society in Cape Girardeau, recently, Dr. Walter W. Ford, Gordonville, read a paper on "Diagnosis and Treatment of Typhoid Fever."——Speakers before the Jefferson County Medical Society in Crystal City recently were Drs. Joseph P. Costello and Julius A. Rossen, St. Louis, on "Pneumonia in Children" and "Lung Conditions Resulting from Upper Respiratory Infections."——Dr. Eugene P. Hamilton, Kansas City, discussed "Diagnosis of Acute Perforations of the Abdominal Viscera" before the Pettis County Medical Society, recently, in Sedalia.——The Randolph-Monroe County Medical Society was addressed, recently, in Moberly, by Dr. Garvey B. Bowers, Moberly, on food allergy.——Dr. Robert Vinyard, Springfield, was recently elected president of the Frisco System Medical Association.——At a joint meeting of the Jackson and Wyandotte county medical societies with the Kansas City Southwest Clinical Society, January 14, Dr. Peter T. Bohan spoke on "Tobacco and Alcohol—Their Effects on the Human Body," and Dr. Cecil G. Leitch, "Sudden Death from Heart Disease."——Dr. John B. Devine discussed "Bilateral Pneumothorax" before the St. Louis Trudeau Club, January 9.

NEW YORK

Society News.—Dr. Francis G. Blake, New Haven, Conn., will address the Medical Society of the County of Westchester, White Plains, January 21, on "Diagnosis and Treatment of Respiratory Diseases."——Dr. Bret Ratner, New York, addressed the Putnam County Medical Society, Carmel, January 8, on "Nature and Management of Allergy in Childhood."——A program on pneumonia was presented before the Onondaga Medical Society, Syracuse, January 7, by Drs. Edward S. Rogers, Albany, director of the state campaign for pneumonia control, who discussed "Organization and Activities for Pneumonia Control"; Orren D. Chapman, Syracuse, "Bacteriology of Pneumonia," and Russell L. Cecil, New York, "Diagnosis and Treatment."

New York City

Prison Demolished to Make Way for Hospital.—Razing of the city penitentiary on Welfare Island was to be started during the last week of December to make way for the construction of a center for the study and treatment of chronic disease, the New York *Times* announced, December 21. Federal funds have been obtained for a nurses' home and a power plant, which will be started as soon as the demolition has progressed far enough. A 1,500 bed hospital is planned, but funds have not been assured.

Conference on Social Hygiene.—A regional conference on social hygiene was held under the auspices of the Social Hygiene Council of Greater New York, January 15, at the Hotel Pennsylvania. Among topics on the program were "The Toll of Gonorrhea," discussed by Drs. Emily D. Barringer, Shirley W. Wynne and William Bierman, New York, and Stanhope Bayne-Jones, New Haven, Conn.; "Control of Syphilis and Gonorrhea in Europe," discussed by Drs. Charles Walter Clarke, David J. Kaliski and William Bayard Long, and "Congenital Syphilis in New York City," discussed by Drs. Alfred Potter, Jessie L. B. Marshall and Thurman B. Givan.

Dr. Park Retires.—Dr. William Hallock Park, for forty-two years director of the bureau of laboratories of the New York Department of Health, retired from active service on his seventy-second birthday, December 30. Under a special arrangement approved by the mayor, Dr. Park will take a six months vacation, at the end of which the new William H. Park Research Laboratories will be dedicated in his honor and he will become director emeritus. When Dr. Park reached the retirement age two years ago, his service was extended for two years. Dr. Ralph S. Muckenfuss, acting associate director, will be in charge of the laboratories.

Society News.—The New York Diabetes Association will meet with the section on medicine of the New York Academy of Medicine, January 21, to hear a symposium on "The Significance of Blood Sugar." Speakers will be Drs. Stanhope Bayne-Jones, New Haven, Conn.; Harold E. Himwich, Albany, and Edward Tolstoi, New York.——The German Medical Society of New York celebrated its seventy-fifth anniversary at a dinner at the Hotel Astor, January 16.——Drs. Walter Freeman, Washington, D. C., and Abraham Myerson, Boston, addressed the New York Neurological Society, January 14, on "Ventriculography with Colloidal Thorium Dioxide" and "Visualization of the Cerebral Vessels by Direct Intracarotid Injection of Thorium Dioxide," respectively.——Drs. Harold Neuhof and Arthur S. W. Touroff addressed the New York Surgical Society, January 8, on "Acute Putrid Abscess of the Lung."——Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, will address the Medical Society of the County of Queens, January 28, on "Medicine in the Changing World," and Drs. Frederick E. Elliott and Vincent de Paul Juster will discuss medical economics. Dr. Howard Fox gave a Friday afternoon lecture, January 3, on diagnosis and treatment of common skin diseases, and Dr. Bret Ratner, January 17, on "Pathogenesis and Basic Principles of Treatments in Allergy of Childhood."——Dr. Harry Wessler, chief of the tuberculosis service, Montefiore Hospital, gave the main address at a clinical session of the Tuberculosis Sanatorium Conference of Metropolitan New York, December 11, on "Psychogenetic Factors in Tuberculosis."

OHIO

Personal.—Dr. Emma J. Betow, for many years a missionary in China, has retired from active service and will make her home in Clyde, it is reported.——Dr. Francis Edgar Mahla, Marion, has been appointed assistant state director of health, succeeding Mr. James E. Bauman, who had held the position forty-three years.——Dr. Edwin P. Kennedy, Cleveland, received first prize in a contest for prose writing conducted recently by the Cleveland Academy of Medicine. Dr. Kennedy's contribution was an essay entitled "Musical Appreciation in Embryo."

Public Lectures on Health.—The Albert Fairchild Holden Foundation of Western Reserve University and the Academy of Medicine of Cleveland have announced the sixth annual series of free public health lectures to be given at the Allen Memorial Medical Library Auditorium. Following is the series:

Dr. Charles W. Stone, associate clinical professor of nervous diseases, Western Reserve University School of Medicine, January 19, Mentality and Crime.
Dr. Harry V. Paryzek, director of medicine, St. Alexis Hospital, February 2, High Blood Pressure.
Dr. Frank M. Casto, dean, Western Reserve University School of Dentistry, February 16, The Relation of Teeth to Health and Appearance.
Dr. Clarence H. Heyman, senior, clinical instructor in orthopedic surgery, Western Reserve University School of Medicine, March 1, The Crippled Child.

OKLAHOMA

Meningitis Closes Schools.—Schools, theaters and other public gathering places were closed, January 10, in Vinita because of meningitis in the community. A battery of soldiers at Fort Sill was quarantined, December 27, when a case appeared in the post. According to an Associated Press report, January 11, twenty-eight deaths had occurred in the state since December 5.

PENNSYLVANIA

Society News.—Drs. George M. Piersol, Philadelphia, and Walter F. Donaldson, Pittsburgh, secretary, Medical Society of the State of Pennsylvania, addressed the Lycoming County Medical Society at its annual meeting, January 10, in Williamsport on "Coronary Artery Disease" and "The Physician as a Neighbor," respectively. Rev. James Corbett made an address at the banquet on "The Pros and Cons of the Socialization of Medicine."——Dr. Roger P. Batchelor, Palmerton, addressed the Carbon County Medical Society, Palmerton, December 19, on "Direct Surgical Relief of Pain."——The Northampton County Medical Society at a meeting, December 20, voted to sponsor the Physicians and Dentists Business Bureau of Lehigh Valley, following a report of the work of the bureau in handling 25,000 accounts.

Philadelphia

Society News.—Dr. Charles A. Doan, Columbus, Ohio, among others, addressed the Pathological Society of Philadelphia, January 9, on "Clinical Experimental Studies on the Pathologic Physiology of the Spleen."——Dr. Joseph C. Yaskin delivered his presidential address before the Philadelphia Psychiatric Society, January 10, on "Psychoneuroses and Neuroses: A Review of One Hundred Cases."

SOUTH DAKOTA

Society News.—At a meeting of the Seventh District Medical Society in Sioux Falls in December, speakers included Dr. Joseph C. Ohlmacher, dean, and Charles A. Hunter, Ph.D., professor of bacteriology and hygiene, University of South Dakota School of Medicine, Vermillion, on "Medical Education and the Medical Profession" and "Immunity and Its Practical Application," respectively.——Dr. William F. Bushnell, Elk Point, was elected president of the South Dakota Health Officers' Association at the recent annual meeting in Huron. Dr. Burt A. Dyar, De Smet, was elected secretary.

VERMONT

University News.—The University of Vermont Medical College has announced a gift of the medical library and surgical instruments of Dr. Isadore C. Eisenberg, New York, who died March 23, 1935.

WISCONSIN

Personal.—Dr. John Welton Fisher, medical director of the Northwestern Mutual Life Insurance Company, Milwaukee, completed fifty years of medical service with that firm, December 15. Dr. Fisher was honored at a dinner given by officers and other representatives of the insurance company in Milwaukee, December 13.

Society News.—Dr. Alfred W. Adson, Rochester, Minn., addressed the Outagamie County Medical Society, Appleton, November 21, on "Essential Hypertension: Surgical Consideration; A Study of Clinical Results Obtained by Extensive Sympathectomy and Rhizotomy." Members of the Fond du Lac, Winnebago, Calumet and Brown-Kewaunee-Door county medical societies were guests.——Leon J. Cole, Ph.D., of the College of Agriculture, University of Wisconsin, Madison, addressed the university medical society, December 11, on "Heredity in Relation to Medicine."

Rogers Memorial Sanitarium.—Dr. Arthur W. Rogers, for many years director and owner of the controlling interest in the Oconomowoc Health Resort, a sanatorium for nervous and mental disease near Oconomowoc, has purchased all the stock of the institution and converted it into a non-stock, non-profit-making corporation as a memorial to Mrs. Rogers. It will henceforth be known as the Rogers Memorial Sanitarium, operated by Dr. Rogers under the direction of a board of trustees made up of Drs. Rogers; James C. Hassall, medical superintendent; Peter Bassoe, Chicago, and William S. Middleton, Madison; Mr. T. H. Spence, Mr. Mitchell Mackie and Mr. Mackey Wells, all of Milwaukee. In addition, Dr. Rogers has arranged that his entire estate will be left as an endowment for the institution. Income from this fund will enable the sanatorium to establish a psychiatric laboratory, to hold clinics and graduate courses in neurology and psychiatry, to publish papers and in general to conduct a sanatorium at minimum cost to its patients and to contribute to the advancement of neurology and psychiatry. The sanatorium is made up of a main building with adjacent cottages on a fifty acre estate on Upper Nashotah Lake in Waukesha County. It is estimated that Dr. Rogers' gift is worth about $1,000,000.

GENERAL

Certification by Pediatric Board.—The American Board of Pediatrics wishes to call the attention of pediatricians to the fact that, after September of this year, no man with ten years' experience or more will be certified without examination.

Deaths from Football Injuries.—Thirty deaths occurred during the 1935 football season directly attributable to the game, according to a study recently made by Prof. Floyd R. Eastwood of New York University and summarized in the New York *Times*. Professor Eastwood found that in the five years 1931-1935 a total of 147 football deaths were recorded. Of these he asserted that 34 per cent were due to faulty leadership, 6 per cent to equipment and facilities and 60 per cent to the nature of the game itself. He noted especially that the death rate among high school players is increasing; fifteen occurred in 1935 as compared with thirteen in 1934. Most of the players killed were halfbacks, tackles and ends. It was estimated that there were 55,440 accidents resulting in injuries to high school players and 9,900 to college players. Besides the deaths from injuries, 68 other deaths among players were caused by pneumonia and other diseases. Professor Eastwood recommended, among other measures to improve the safety of the game, preseason medical examination of all candidates, adequate physical conditioning, the presence of physicians at all games, increased use of protective devices by halfbacks and ends, and development of field coaches with authority to remove injured players from the game.

Automobile Fatalities Increase.—In 1935 there was a total of 36,400 deaths reported as compared with 36,101 for the previous year, according to the National Safety Council, establishing a new all time high. Because of an increase of about 1 per cent in the population, the death rate per hundred thousand of population in 1935 was the same as in 1934, 28.5. Automobile registration advanced 4.3 per cent from 1934 to 1935 and gasoline consumption about 6 per cent, indicating an increase in the number of miles the average motorist was able to travel without an accident. Eastern states, including New England, reduced fatal accidents 3 per cent, with Massachusetts and Rhode Island leading with decreases, based on figures for eleven months, of 19 and 15 per cent, respectively. Milwaukee showed a rate of 11.2 deaths per hundred thousand of population, the lowest of any city over 500,000 population. Providence, R. I., in the group of cities from 250,000 to 500,000 population, had a rate of 7.0, about one-third the average for all cities in its group. The National Safety Council began a five year program to reduce automobile accidents throughout the country, January 1. Using the total of 36,400 motor fatalities of 1935 as a "par," it aims this year to obtain through educational programs a reduction of 7 per cent for the country at large, which would be an actual saving of 2,548 lives.

Medical Bills in Congress.—*Bills Introduced:* S. 3475, introduced by Senator Frazier, North Dakota, and H. R. 9680, introduced by Representative Lundeen, Minnesota, propose to establish a nation-wide system of social insurance, providing compensation for the unemployed, aged or disabled beneficiaries. S. 3499, introduced by Senator McNary, Oregon, proposes to direct the Administrator of Veterans' Affairs to place on the pension roll, subject to the provisions and limitations of the pension laws, the name of each person who served the United States as an acting assistant surgeon or contract surgeon during the war with Spain, including the Philippine Insurrection and the Boxer Rebellion. H. R. 9473, introduced by Representative Bland, Virginia, proposes to provide that no individual, partnership, association or corporation shall employ any person to serve as medical officer or ship's physician on a registered or enrolled and licensed vessel of the United States unless such person is duly licensed to act as such by the Surgeon General of the United States Public Health Service. H. R. 9475, introduced by Representative Sauthoff, Wisconsin, proposes that if a veteran suffers a permanent loss or loss of use of both eyes, without regard to the time or cause of such loss, he shall be paid a pension of not less than $72 a month. H. R. 9495, introduced by Representative Dobbins, Illinois, proposes to provide that any person guilty of depositing or causing to be deposited in the mails certain unmailable matter may be prosecuted either in the district in which the unmailable matter was mailed or in the district to which it is carried by mail for delivery. H. R. 9993, introduced by Delegate King, Hawaii, proposes to authorize an appropriation not to exceed $250,000 to erect a hospital in Hawaii for the care and treatment of persons entitled to domiciliary or hospital facilities under the laws pertaining to the Bureau of National Homes, formerly the National Homes for Disabled Volunteer Soldiers.

Society News.—The thirteenth annual meeting of the American Orthopsychiatric Association will be held at the Hotel Statler, Cleveland, February 20-22.——The Association of American Physicians will hold its annual meeting at Atlantic City, May 5-6.——At the midwinter meeting of the American Psychoanalytic Association in Boston, December 28, speakers included Drs. Karl A. Menninger, Topeka, Kan., on "Psychoanalytic Aspects of Some Gynecologic Disorders," and Isador H. Coriat, Boston, "Humor and Hypomania."——Dr. Eugene Lee Shrader, assistant professor of internal medicine, St. Louis University School of Medicine, St. Louis, was elected president of the American Student Health Association at its annual session in New York, December 28; Dr. Lee W. Milford, Clemson College, Clemson, S. C., vice president, and Dr. Ruth E. Boynton, associate professor of preventive medicine and public health, University of Minnesota Medical School, Minneapolis, secretary.——At the annual convention of the Phi Delta Epsilon Fraternity in Philadelphia, recently, a resolution was adopted to the effect that the fraternity support the American Medical Association in its stand against socialized medicine.——Edwin Grant Conklin, Ph.D., professor of biology, Princeton University, Princeton, N. J., was chosen president-elect of the American Association for the Advancement of Science at the annual session in St. Louis, December 30-January 2. Dr. Joseph T. Wearn, Cleveland, was named vice president to be chairman of Section N (Medical Sciences) and Dr. Ross G. Harrison, New Haven, Conn., vice president of the section on zoological sciences.——At the annual meeting of the National Society for the Advancement of Gastro-Enterology in New York, December 5, the following officers were elected: Drs. Anthony Bassler, New York, president; Albert J. Sullivan, New Haven, Conn., Harry M. Eberhard, Philadelphia, and Samuel Bernard Kaplan, Newark, N. J., vice presidents; Roy Upham, New York, secretary general, and William C. Jacobson, secretary.

Government Services

Allergy Unit for Veterans' Facilities

The medical and hospital service of the Veterans' Administration announces that an allergy unit has been established at the facility at Aspinwall, Pa., under the direction of Dr. Leo H. Criep. The laboratory of the unit will prepare allergens for skin testing for other facilities and will be a teaching center for physicians attached to the administration.

Examination for Medical Corps of Navy

An examination of candidates for appointment in the medical corps of the U. S. Navy will be held at the Naval Medical School, Washington, D. C., and the Naval Hospital, Mare Island, San Francisco, beginning May 18. Applicants must be graduates of schools listed as class A by the Council on Medical Education and Hospitals of the American Medical Association, must be citizens of the United States, and must have served at least one year's rotating internship in a civilian hospital. Candidates must be between the ages of 21 and 32. For further information and application blanks, address the Surgeon General of the U. S. Navy, Navy Department, Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 14, 1935.

The Right to Die

The Voluntary Euthanasia Legalization Society held its first public meeting recently in the House of the British Medical Association. The president of the society, Lord Moynihan, said that this was the first chance of putting the aims of the society before a public meeting. In spite of the greatly strengthened capacity of the profession to relieve pain, there were cases in which the agony was intense and the fatal issue inevitable.

Mr. C. J. Bond (surgeon), chairman of the executive committee, said that the project dated from Dr. C. K. Millard's address to the Society of Medical Officers of Health in 1931. Civilized man today was being called on to exercise increasing control over human development and human life. This meant control at entrance and at exit. To exercise this control wisely, a truer conception was needed of the real value of life, which consisted not merely in living but in living usefully and happily. Where there was no hope of cure or restoration to health and usefulness, the wish of the sufferer to terminate a burdensome and unhappy existence should be respected. Ours is an aging population and thus the total amount of suffering and useless lives grows larger and requires wise handling. The position of the physician with regard to euthanasia was difficult. It was his duty to relieve suffering by every means. But the sufferer might become habituated to the anodyne; very large doses were then required, and the balance between an anodyne and a lethal dose might become a very delicate one. Moreover, the repeated return to consciousness, difficult to avoid, might be a very depressing and sad experience. Indeed, the prolongation of life by the use of drugs might increase suffering. By the proposed bill the physician could deal with suffering more effectively. What was now being done secretly and ineffectively could be done openly on a legal basis. Such criticisms as had appeared in the press, describing the proposal as "a bill to promote murder" and a physician who helps a sufferer as a "public executioner," were entirely beside the mark. The physician in such a case should be looked on as an anesthetist whose relief is permanent.

Dr. C. Killick Millard (formerly health officer), honorary secretary of the society and its founder, said that much of the suffering in the world was due to certain diseases which killed by a slow lingering process of exhaustion due to pain and suffering. All through the world's history there had been those who wondered whether all this pain and suffering in dying from incurable disease was necessary, whether it really was God's will, or whether it might not be right under certain circumstances to substitute for the lingering and painful death a quick and painless one. As the law now stood, any one, no matter how great his sufferings or how certain his doom, who took on himself to terminate his life was guilty of suicide, and any one who aided him was guilty of murder. The law was harsh and unmerciful and was out of harmony with the humanitarian spirit of the age. A prominent layman, the earl of Listowel, and a number of well known clergymen spoke in favor of the bill. They could see no moral or religious objections to it. Rev. Dr. Norwood said that a society which maintained capital punishment should not condemn loving and sensitive people to watch the lingering death of one dear to them, knowing that such an attitude would be indefensible if a dog was the sufferer.

The only opposition came from Dr. C. O. Hawthorne, member of the Council of the British Medical Association. He said that though the meeting was held in the House of the British Medical Association, the latter was not responsible for it and the council had never considered the question. He said that the position contemplated—that of a sufferer from severe and prolonged pain with the prospect of a fatal termination—was most exceptional in medical experience. On the other hand, the remedy proposed was an enormous change in the social life. Once admitted, the principle was likely to have extensions. It had already been hinted that pain would not be a necessary condition, but only uselessness. Further, a sufferer from severe and prolonged pain was in no condition to exercise a calm judgment or to appreciate fully the issues involved in his decision. Was there not something repulsive in a family council to decide whether a father or mother should be urged to or deterred from suicide? Also the tribunal might make mistakes. Lord Moynihan said that Dr. Hawthorne had made a poor case. However exceptional the condition for which relief was sought, those who had seen it would feel that justice was on their side. It was an unworthy point to say that physicians were capable of making mistakes. In the kind of case contemplated there was no possibility of doubt whatever. A resolution in favor of the bill was carried by a majority of ten to one.

Spahlinger's Vaccine for the Prevention of Bovine Tuberculosis

In a previous letter, the experiments made by the government of northern Ireland with Spahlinger's vaccine for the prevention of bovine tuberculosis were described. In the lay press, great claims were made for a valuable discovery; but informed opinion was not so optimistic. A report has just been issued by the Joint Committee on Tuberculosis of the Medical Research Council and the Agricultural Council. The committee considers that more information is required concerning Spahlinger's system of vaccination before the method can be introduced into practical farming. Besides the need for experience in preparing and testing the vaccine before use, experiments would be required to determine (1) whether the tuberculin test interferes with vaccination, as suggested by Spahlinger; (2) the best dose of vaccine and the best method of vaccination, and how early in life it is safe to vaccinate a calf; (3) the most suitable age for vaccination; how early in life it is safe to vaccinate a calf; (4) the time after vaccination at which immunity appears and how long it lasts; (5) the persistence of immunity in animals exposed once or repeatedly to infection by natural means, especially whether vaccination early in life would protect under farming conditions at an age when heifers would join the herd—that is, when they calve for the first time, and (6) whether natural exposure to infection, as opposed to an intravenous test dose, would result in only mild or negligible infection, as has been suggested. The committee states that a case has been made out for further investigation. A thorough test should be made in this country if Mr. Spahlinger is willing to supply vaccine in sufficient quantity for inoculation of a suitable series of animals. The committee recommends that, until the vaccine has been shown by further and extended experiments to be effective against natural as well as experimental methods of infection, its practical application should be deferred. The members of the committee "deprecate most strongly its enforced general use until a thorough investigation has been made."

"General" Peritonitis

Mr. Sampson Handley expounded certain points in the pathology of peritonitis which directly bear on the problem of paralytic ileus. General peritonitis was rarely universal, even at the time of death. For his adoption of the upright posture man paid a high price in his liability to hernia and enteroptosis, but he secured the countervailing advantage that his peritoneal cavity drained to a low point—the pelvis—not only in the erect but also in the reclining posture. The dog had no such advantage, and peritoneal infection killed him in three days.

Mr. Handley has seen only once a really universal general peritonitis, affecting even the stomach and the diaphragm. It occurred in a boy of 10, who made a good recovery after appendectomy and pelvic drainage, without developing obstruction. This case shows that, in the absence of ileus, even universal peritonitis is not necessarily fatal.

In man peritonitis begins in the pelvis. Even when the septic focus, such as a pinhole duodenal perforation, is high in the abdomen, and still more in infections arising lower down, such as appendicitis, the infective material drains rapidly into the pelvis, unless adhesions form. Thus only limited spread occurs around the original focus, but an intense inflammation arises in the rectovesical pouch, to which the septic products gravitate. The pelvis fills with pus from below upward and thence the pus rises gradually into the hypogastric region and hypogastric rigidity appears. When the peritonitic flood has risen up to or a little higher than the umbilicus, intestinal paralysis kills the patient. The floodlike invasion of the peritoneal cavity from below upward has the important consequence that the stomach, jejunum, transverse colon and of course the liver and diaphragm remain uninflamed and unparalyzed until the patient is moribund. This is the key to successful treatment. These facts Mr. Handley has ascertained by direct inspection of the upper abdominal region during a large number of laparotomies and has verified them post mortem.

Thus there are three clinical stages of so-called general peritonitis: (1) pelvic peritonitis, (2) hypogastric peritonitis and (3) the hopeless "clinical picture" or textbook stage. In pelvic peritonitis there are acute rectal and vaginal tenderness with edematous thickening of the rectovesical fold and of the uterosacral ligaments. There are hypogastric distention and tenderness and perhaps vomiting, but no hypogastric rigidity, though there may be right iliac rigidity. If the appendix is pelvic it may be felt as a definite swelling. Uterine hemorrhage may occur in very acute pelvic peritonitis due to appendicitis. But it is on recognition of hypogastric peritonitis that the patient's life depends. This stage is characterized by the appearance of hypogastric rigidity and by immobility supervening on the previous hypogastric distention. Above the umbilicus the abdomen is flat or only slightly distended, still soft and only moderately tender. On palpation a resonant rounded swelling, almost as definite in its upper outline as the distended bladder, and reaching to the level of the umbilicus, can be felt in the hypogastrium. It is formed by distended coils of small intestine glued together, and Mr. Handley has called it "the hypogastric football." Soon the supra-umbilical region, though remaining soft and retaining some movement, begins to share the distention of the lower part of the abdomen, and the stretching of the muscles may be mistaken for genuine rigidity. Vomiting is vigorous and at first not offensive. Though obstruction is evidently present, small quantities of flatus may continue to be passed. The hypogastric stage is short—perhaps twenty-four hours. The signs of the terminal stage are those found under the heading of "general peritonitis" in the textbooks. Rigidity is now present above as well as below the umbilicus.

INTESTINAL PARALYSIS

Intestinal paralysis may arise in the pelvic stage of an upward spreading peritonitis. Only the pelvic intestine—a length of the pelvic ileum and later, not invariably and sometimes incompletely, a length of the pelvic colon are paralyzed. The intestine above the pelvic brim is distended but not inflamed. In 1910 Mr. Handley described this condition under the name "ileus duplex," to emphasize the fact that there are two obstructions. He showed that successful treatment depended on recognition of this fact and the performance of ileocecostomy and cecostomy.

Ileus may remain absent during the pelvic stage of the peritonitis and supervene only in the hypogastric stage. The operative problem then is different, for longer and less defined tracts of both large and small intestine are paralyzed. When "the hypogastric football" has become palpable the time is short, but it may be assumed that paralysis has not affected the stomach, jejunum and transverse colon. Thus a small but complete alimentary canal can be constructed above the level of the peritonitic flood. A distended coil of jejunum should be anastomosed to the transverse colon and the cecum opened. Reflux takes place from the anastomosis along the transverse and ascending colon to the cecostomy. Within twenty-four hours free cecal discharge occurs, the abdomen becomes flat and soft, the pulse falls, and the apparently moribund patient begins to recover. Cecostomy is recommended in the textbooks but is not efficient, and enterostomy drains only the small intestine, being prevented from draining the large intestine by the ileocecal valve.

PARIS

(From Our Regular Correspondent)

Dec. 6, 1935.

Natality in France and Germany

At the Congress of Natality held at Nantes, Sept. 26, 1935, a paper was read by Boverat on the movement of population in France and Germany. Since 1933 the vital statistics figures in these two counties have differed greatly. The decreased natality in France is well known. From a maximum number of births, 1,034,000 in 1868, there had been a steady decrease to 790,000 in 1913. In 1921 there was a temporary rise to 813,000 because of numerous marriages following demobilization. Then there was a drop to 722,000 in 1932, to 682,000 in 1933 and to 677,000 in 1934. The number of deaths in 1934 was 634,000, the lowest recorded. In spite of this the natality, or excess of births over deaths, is only 42,000.

In Germany an unprecedented number of births took place in 1934. In 1933 there were 971,000 and in 1934 an increase of 225,000, or 1,196,000 births. This increase continues in 1935. In the first three months of 1935 there were 47,000 more births than in the corresponding period of 1934. In three years the number of births in Germany has increased by 300,000.

The ratio of French to German births was 74 per cent in 1932, was 57 per cent in 1934, and will probably drop to 50 per cent this year. A resolution was passed at the congress calling the attention of the government and of the educated public to menace of a rapid depopulation of France unless an energetic campaign is initiated to encourage a larger number of births.

Lipoid Nephrosis in a Child

In the *Bulletin* of the Paris Pediatric Society, Professor Nobécourt has reported a rare instance of a pure lipoid nephrosis in infancy. When the child was 2 years old the parents observed an edema of the eyelids, followed by a similar condition of the skin of the trunk and lower extremities. The urine contained 2.5 Gm. of albumin per thousand cubic centimeters. At the time of admission to Professor Nobécourt's service in February 1934 the child was 26 months of age. The edema of the face and lumbar regions was very marked. The examination of the heart and lungs revealed nothing abnormal. The urine now contained 6 Gm. of albumin per thousand cubic centimeters but was negative on microscopic examination. The blood examination revealed a hypercholesterinemia, a hyperlipidemia, a diminution of the total proteins and an inversion of the serum-globulin ratio without nitrogen retention, all of which Professor Nobécourt considered typical for a lipoid nephrosis. About a month after the onset, the child, who had up to that time been placed on a salt-free diet and given few proteins, was then allowed a diet rich in protein. The general condition improved rapidly and the edema disappeared. Nobécourt, in closing his clinical lecture, stated that the case was one of a

typical lipoid nephrosis characterized by the clinical syndrome of marked edema, ascites and hydrothorax, the urinary syndrome of marked albuminuria, absence of casts and presence of double refractive bodies, and the blood syndrome of lactescent serum, increased total lipoids and cholesterol, decrease of proteins, inversion of the serum-globulin ratio and absence of evidence of nitrogen retention.

Failure of Roentgen Treatment of Tuberculous Meningitis

In the September *Archives de médecine des enfants,* Weiner and his associates report the results obtained at the Odessa Children's Hospital in the roentgen treatment of twenty-five patients with tuberculous meningitis, twelve girls and thirteen boys. In four cases an influenzal infection and in three measles immediately preceded the meningitis. The onset was sudden in five children and gradual in twenty. A lumbar puncture was done in all cases, but tubercle bacilli were found in only eight spinal fluids. The roentgen treatment was begun as early as the first to the third day after admission. In all, ten children were given the treatment from the fourth to the tenth day, and in the remaining fifteen cases from the eleventh to the eighteenth day after admission. As fields, the neck, both temporal and the frontal regions were employed. In most children two treatments were given (one each day) for the first two days, and then only on alternate days, according to the general condition. All of the twenty-five children died. Necropsies could be performed on ten of the twenty-five and revealed generalized miliary lesions and a diffuse tuberculous meningitis in every case.

BERLIN

(From Our Regular Correspondent)

Nov. 25, 1935.

Carcinoma of the Lung

The Medical Society of Frankfort-on-Main devoted a recent session to the consideration of carcinoma of the lung. Professor Fischer-Wasels said that, compared with other forms of carcinoma, lung cancer, particularly since the war, has shown a striking increase. This is a general observation, although no explanation has been found as yet. For the period 1929-1934 the statistics of the Frankfort Pathologic Institute show a ten to twenty fold increase of lung cancer. These figures cannot be explained away by the assumption of "improvement in diagnosis" and "increase in the admissions of cancer patients." As for cancer in general, one must probably seek the fundamental causes for bronchial carcinoma in repeatedly disturbed regenerative processes; further, in a congenital predisposition. In the bronchitis associated with influenza and measles, one observes the formation of pavement epithelium in the bronchial mucosa. Likewise, old tuberculous cavities and recurring inflammations in old gunshot scars may give rise to regenerative processes with malignant growth. The well known Schneeberg and Joachimstal lung cancer is traced to chronic dust action and to radium salts and emanation. Pneumoconiotic influences, however, are given little weight. Of late, an increase of the predisposition to cancer has been ascribed to nicotine. It is a common observation that malformations create a predisposition to cancer. The possibility of an internal predisposition to cancer is awakening justified interest, since, likewise, in the offspring of animals in which, by means of tar applications, cancer symptoms have been produced, a sensitiveness to tar injuries has been demonstrated.

Experimental researches on the origin of lung cancer has thrown further light on the subject. M. Schmidtmann of Stuttgart at the same session reported on inhalation experiments with Schneeberg stone dust and automobile waste gases which yielded, on protracted inhalations of arsenic-containing dust, a deep-lying growth of the bronchial epithelium with peribronchial lymphocyte formations in the walls. Genuine tumors could not, however, thus be produced. All kinds of Schneeberg stone dust brought about these changes when arsenic was mixed with them. Ordinary street dust did not produce this effect. The waste gases from gasoline motors have no effect on the bronchial mucosa even after many years of exposure, whereas the gases from oil-driven motors cause marked dust deposits with callus formation in the lungs, destruction of bronchiole twigs, emphysema and symptoms of atelectasis. Although infiltrating epithelial growth has not been observed as yet, the changes in the lungs are so marked that the inspiration of the waste gases may be said to exert considerable influence on the organism.

Professor Alwens of the Frankfort-on-Main Hospital has made observations on the occurrence of pulmonary tumors in industrial plants. Since 1926 he has observed thirty cases of lung carcinoma. A number of these patients were employed at a plant that manufactured chromates in addition to sulfuric acid, hydrochloric acid and sulfates. A careful study of family history does not reveal that heredity plays any part in the disorder. In contrast with the opinion of other authors who think that chromate dust must be regarded as exerting a specific influence in the production of cancer of the lung, Alwens holds that the cases involved are too few to afford a basis for conclusions.

Professor Gross furnished supplementary material to this presentation in the form of statistics on pulmonary cancer in the chromate department of the I G Farbenindustrie. In addition to fourteen cases in the plants of this firm (some of which were included in the number mentioned), he knew of eleven further cases in the chromate plant. This makes it seem likely that there is in the chromate plant some factor that produces carcinoma of the lung. The further elaboration of the question has been taken over by the medical committee of the German Society for the Protection of Workmen.

According to the account of Bock of the Frankfort University Clinic, forty-five primary lung cancers were observed within a period of eight years (1926-1934). Thirty-nine of the cases were in men, and the location was usually on the right side.

The statistics of Hegler of Hamburg on 240 cases diagnosed during a fourteen-year period (1920-1934) likewise confirm the marked increase of lung cancer. The hospital diagnoses only 50 per cent of the cases that are discovered at necropsy; outside of the hospitals only 15 per cent are diagnosed. The condition often remains symptomless or other forms of disease are simulated. Even if the condition manifests itself solely as a lung disorder, the differential diagnosis is difficult. At the clinic the diagnosis, by bringing into action all possible aids, proved possible in 85 per cent of the cases.

Albrecht said that the roentgenograms often show great similarity to those of pneumonia. Nevertheless the metastases of the glands (particularly of the paratracheal glands) point usually to the correct diagnosis, which occasionally is not confirmed until repeated roentgenologic control researches have been made. In rare cases the primary carcinoma appears as a circular tumor. Differentiation from a metastasis, an echinococcus or an abscess is not possible from the roentgenograms alone. Confusion of the condition with certain forms of tuberculosis, actinomycosis and silicosis occurs. Generally, however, the aspects are characteristic. In any event, the roentgenogram will clear up many points.

The prognosis of roentgen irradiation was discussed by Professor Holfelder. Since lung cancer is inclined to metastasize early, one cannot count on a permanent cure unless one can succeed in destroying the cancer tissue so early that no opportunity is offered for the development of metastases. According

to present knowledge, the only treatment that will lead to practical results in the early combating of lung cancer is high voltage roentgen therapy. Nevetheless, Holfelder applied systematic irradiation to all cases of lung cancer. It was discovered, from observations in ten cases, that systematic irradiation of bronchial cancer, if begun early, will produce permanent results and may change our previous conceptions with regard to the fatal outcome of this disease.

Regular Health Examinations in Industrial Plants

Between the "labor front" (which has replaced the trade unions) and the federal fuehrer of physicians new agreements have been entered into concerning the institution of regular health examinations in industrial plants. This created a new basis for the protection of the health of youth working in the trades. The social bureau of the Reichs-Jugendführung has drawn up a list of minimum requirements, in order to assure the carrying out of a uniform plan of health observation for juveniles. The first thing necessary will be an efficient bureau of vocational guidance, which, on the basis of practical medical knowledge, through suitable selection of workmen, will eliminate the damage resulting from the choice of an entirely undesirable vocation. A medical examination as a preliminary to taking up new employment should be introduced, as far as possible, in all industries. The second most important feature is the demand that all possible protective devices for labor be introduced, including the creation of the necessary recess periods, rest periods and leaves of absence, in order that the needs of the youthful organism be taken full account of. A further demand is the extension of the current medical examination to all juveniles. The examination should be repeated from time to time during at least the first two years of industrial activity, in order that the effects of industrial work on the juvenile organism may be studied.

Ceremonies at the Berlin Charité Hospital

The Berlin Charité Hospital recently celebrated its 225th anniversary. It owes its existence to Frederick I, king of Prussia, who in 1709, at the outbreak of the plague, issued so-called plague regulations, which provided among other things for the immediate erection of quarantine centers and a hospital. The Charité of later years dates back to the plague hospital created at this time. For the time being, a part of the hospital building was used as a garrison hospital. The increasing importance of the Charité Hospital is an expression of the progress of medicine in the nineteenth century. In 1810, following the founding of the University of Berlin, which is celebrating this year its 125th anniversary, the clinics of the Charité were made university clinics.

The Gaging of Hemometers

In 1933 the Deutsche Gesellschaft für Innere Medizin appointed a commission to make recommendations for the gaging of hemometers for clinical purposes. The commission has now made a report. Manufacturers of such instruments will be urged to gage hemometers for clinical use exclusively on a gram-per cent basis. The gaging shall be accomplished on the basis of gas analysis and spectrophotometry applied to the yellow and the green mercury lines. The valuations obtained correspond to 100 per cent hemoglobin as determined electrodialytically.

If a second measuring unit (so-called percentage or hemometer unit) is to be employed, 100 units should equal 16 Gm. per cent. In every case the relation must be stated in the description accompanying the apparatus. Gaging of hemometers that function with solutions of hydrochloric acid and hematin must be done with whole blood (not with pure hemoglobin solutions). In descriptions of these instruments it must always be stated how much time should elapse between mixing and dilution of the solution of blood and hydrochloric acid or between mixing and reading of the result, in order to obtain the valuations on which the gaging is based. It is recommended that, as a rule, a three-minute period be made the standard. Instruments that are in keeping with these requirements may bear the statement "The gaging of this instrument is in accordance with the requirements of the Deutsche Gesellschaft für Innere Medizin."

VIENNA

(From Our Regular Correspondent)

Nov. 18, 1935.

The Size of the Heart as Shown in the Roentgenogram

During the course of lectures for physicians, organized as a "seminar" by the Faculty of Medicine of Vienna and open to every physician, Dozent Dr. Zdansky discussed roentgenograms of the heart. The size of the living heart is influenced by changes in the blood supply, changes in the resistance which the heart must overcome, and changes in the nature of the heart muscle. The size of the heart also is greater with the body in a reclining than in an upright position. These changes in size are of great importance for the roentgenologist. The "small" heart is often termed hypoplastic and congenitally inferior. In reality it is not smaller than normal but only appears so with the subject standing, because in this position it is inadequately filled with blood. Owing to deficient muscular tonus of the diaphragm and the abdominal muscles, possibly also by reason of vasomotor weakness, a portion of the blood is retained in the splanchnic area. If the subject assumes a horizontal position, this blood is brought back into the circulation, and immediately the heart takes on a normal appearance. Investigations at the First Medical Clinic in Vienna have shown that this change of position brings about 1.5 liters of blood back into the circulation, whereby the heart volume, as computed roentgenologically, increases by at least 200 cc. However, true hypoplastic, inferior hearts are not rare. Tachycardia is likewise a factor in diminutions in the size of the heart: diminished blood flow to the heart owing to a shortening of the diastolic filling phase. Abnormally small hearts are found after severe blood losses; also as a result of loss of water due to vomiting or to protracted diarrhea. After extensive transfusions or during convalescence, the heart becomes enlarged. One may observe in a roentgenogram a transient enlargement of a heart following the administration of a large blood transfusion, and likewise in some cases of plethora (idiopathic polycythemia). Importance attaches also to changes in the size of the heart following physical exertions. If the work performed was heavy, at first there may be a distinct reduction in the size of the heart, which is difficult to explain. In weakly persons, however, distinct enlargements occur, without necessarily any cardiac insufficiency. Such hearts should be carefully watched. Caution must be exercised in the application of training for sports, in which event patients may regain their full health and strength, and the size of the heart will not exceed the normal. Observations in a large series of cases justify the assumption that the hearts that show an enlargement following training were originally under size (too weak) and that they developed to normal size under the influence of the training. There are also enlargements that are to be regarded as pathologic dilatations resulting from overexertion. Examinations of athletes have shown that one must not rely, in determining the size of the heart, on the measurement of the dimensions as revealed in a single projection. Frequently changes in the shape of the heart develop within a short time. Inside a few minutes the heart may change from an oblong shape into a more compressed form, and vice versa, so that one can scarcely believe that one is dealing with the same heart.

Professor Hitzenberger spoke on the clinical aspects of changes in the size of the heart due to changes in function. He

mentioned that many healthy persons experience dizziness or weakness on rising from a horizontal position. In such persons one may find a sharp lowering of the blood pressure, and in a standing posture they may present a very small heart in the roentgenogram. In the differential diagnosis, one must rule out spontaneous hypoglycemia, which shows similar conditions. It must be emphasized also that, in participation in sports, no considerable enlargements of the heart occur unless that organ has been recently weakened by influenza or by an anginal attack. If the heart has been thus impaired, distinct dilatations—1 cm. or more in every diameter—are not rare and they require as a rule considerable time to retrogress. It is therefore advisable, after a patient has had an acute infectious disease, to warn him against undergoing any special training in sport for two or three months at least, and persons who, following physical exercise, show dilatations even of a transient nature should refrain from participation in any form of sport.

Researches on healthy hearts have shown that following a sudden rise of intrathoracic pressure (due to coughing or to the application of Valsalva's experiment) the heart becomes distinctly smaller. The heart blood is rapidly pressed out, and the blood flow to the heart is diminished. The longer the respiration under pressure continues, the more the heart is "pumped out."

NETHERLANDS

(From Our Regular Correspondent)

Oct. 29, 1935.

Report on Vivisection

The president of the sanitary council of the Netherlands received a communication from the minister of the interior some time ago requesting him, by reason of complaints received, to inquire into the subject of vivisection. A commission of fifteen persons, comprising advocates and opponents of vivisection, was created and after studying the problem in detail it rendered a short report, which contains nevertheless important facts. It appears that the question pertaining to the control of vivisection by law was raised first in 1880 in the états généraux. In 1883 the Royal Academy of Sciences replied to a question submitted by the minister of the interior that the practice of vivisection is indispensable to higher research and that no abuses had as yet been reported. In 1889 the government declared that vivisection is practiced in all the universities of the country but that measures are always adopted to prevent suffering on the part of animals. In 1902, 1904 and 1906, further petitions were addressed to the government requesting that restrictions be imposed on the practice of vivisection. The commission appointed by the sanitary council reported that, as there was no evidence of abuse in the application of vivisection, it had decided that, as provided for in articles 254 and 455 of the Penal Code, which pertain to the protection of animals, it should furnish a plan for the prevention of any possible abuses. It is, however, incomprehensible how any one can regard experiments on animals as cruel treatment, for the spirit in which scientific experiments are performed, the purpose pursued and the advantages that accrue would seem to be sufficient justification. The report of this commission ended naturally with a compromise. Scientists of the Netherlands will not abuse the privilege of performing vivisections, even without legal authorizations. The posting of notices in the laboratories in which vivisection is performed appears to be useless for, according to the statement of the commission, no evidence of abuse or cruelty could be adduced.

Protection of Pupils Against Infection

The government has recently put into effect a new regulation for the protection of pupils against the results of contact with contagious diseases developing in the personnel of the instructional corps. Any applicant for a permanent position in an institution of public instruction cannot be admitted unless he furnishes a certificate, dated back no more than six months, showing that he is not affected with tuberculosis. The public health officer having jurisdiction may require any member of the personnel of an institution of learning to submit to a reexamination with a view to securing a new certificate. The health officer and the examining physicians have the right to demand the surrender of a certificate previously issued. If a certificate is no longer valid or has been withdrawn, an instructor must sever his connection with the institution until he secures a new certificate. The law provides also penalties applicable to school directors who admit to institutions under their control persons who are not in possession of a valid certificate.

Traffic Accidents

For the second time, the Central Bureau of Statistics, with headquarters in The Hague, has published a survey of the traffic accidents occurring in the Netherlands. Conditions in general have changed but slightly, although in the large cities there has been an upward trend in the number of accidents. More accidents occur in June and October than in any other months. The sick and the infirm are but rarely the cause of traffic accidents. The imprudent, the absent-minded, the violent, the careless and the daredevils are often found at fault. The last mentioned class do not slow down at the crossings, do not permit others to pass, make turns to suit their own convenience, do not dim their lights when indicated, and take no thought of the danger associated with driving when intoxicated.

The measures designed to prevent traffic accidents are very difficult to apply; nevertheless a strict supervision (likewise at night on the cross country highways) exercised by a well equipped police force will be sure to yield good results. Violators of traffic regulations will receive heavy penalties, large fines, prison sentences and, under certain circumstances, will have their driving license revoked. After the application of the foregoing measures it will be interesting to make a new statistical analysis and to see what progress, if any, has been made.

Films for Instruction in First Aid

The Netherlands society that gives instruction on the best manner of rendering first aid to the injured has adopted the plan of using films. One purpose to be accomplished is to assure uniform instruction in all countries. This society bestows likewise the diplomas granting the right to render first aid to the injured. To secure the best films possible, the administration and the general assembly of the members have asked the opinion and the approval of all physicians who give courses of instruction on first aid to the injured. It is desired that as many instructing physicians as possible collaborate for this purpose, and the administration has invited them to enroll as members.

Lead Encephalitis

Dr. F. Bezemer has reported a case of lead encephalitis resulting from the use of rice powder containing lead carbonate, in a Chinese girl aged 10. Aside from cerebral symptoms that pointed to a comatose or encephalic type of malaria (examination of the blood was negative as regards the presence of the parasites of malaria), one observed an erythrocytic basophilic granulation, a mild anemia, porphyrinuria and a pathologic concentration of lead in the urine.

The Utrecht Institute of Bacteriology and Serology

The merger of the Laboratoire central de santé publique and the Institut de sérologie d'Utrecht has given rise to the Institut central de bactériologie et de sérologie. The bacteriologic section will be directed by J. F. Hulk, the former head of the Service de santé de la marine. Dr. A. Pondman will be the director of the serologic section and the associate director of the institute. Dr. Reith will head the chemical section. Dr. W. A. Timmerman has been appointed general director of the

institute. The new buildings of the institute are already occupied by the various services. The old buildings will be remodeled. To assure a close connection between the new institute and the Département d'affaires sociales, a committee has been appointed composed of the director general of public health, the president of the sanitary council, representatives of the Organisation centrale de physique and several experts, while Dr. Timmerman will serve as a member of the sanitary council.

CHINA

(From Our Regular Correspondent)

Dec. 7, 1935.

The National Health Service

The introduction of scientific medicine into China has made rapid progress during recent years. While missionaries have done a great service in the past with their hospitals and dispensaries and were for years almost the sole source of medical treatment for the people, in recent years the government and private organizations have come to the fore in a very effective manner. The national government now has a ministry of health under the able leadership of Dr. J. Hung Lui, a graduate of Harvard University and for a number of years the director of the Peiping Union Medical College. During the few years that he has directed this work there has been rapid progress. The marked success is due to his untiring energy and capable organization with the assistance of an enthusiastic group of devoted young doctors. The emphasis of this work is most appropriately being placed on public health and preventive medicine, which have now been undergoing organization and development for the past six years. The start has been made at the capital itself, where a central field health station has been established with a threefold objective: establishment of experimental and investigating institutions, demonstration of practical field work, and training of technical personnel.

The organization is divided into nine departments, which carry on their work under the direction of the ministry:

1. Bacteriology and epidemic disease control: Under this department active measures are being taken against various epidemic diseases, such as cholera, cerebrospinal meningitis, diphtheria and plague. For the preparation of vaccines and serums there is a special organization known as the National Epidemic Prevention Bureau, which is placing these products on the market at approximate cost, which is far below the cost of imported commercial products. These are rapidly being accepted by the profession as of equal or superior value.

2. Chemistry and pharmacology: During the past year this department has issued rather stringent regulations governing "patent" and proprietary medicines. This work is expected to remedy the rapidly growing evil of the "patent medicine" industry, which has taken on great proportions in recent years. China is perhaps the most fertile field of all nations for quack remedies. The investigation of old standard native remedies and an effort to put them on a scientific basis is an important undertaking. The great success of ephedrine, made from the old Chinese remedy mah-huang, has given much stimulus to investigation of other old time empirical drugs. There is no doubt that the scientific investigation of these long used herbs will bring forth many more valuable remedies.

3. Parasitology: In this field a large work has been undertaken more especially with kala-azar and schistosomiasis, which are less known in other countries and regarding which there is still room for much research work.

4. Sanitary engineering: In a country the size of China, with many large cities entirely devoid of any sanitary engineering, one can imagine the work that is before the nation. This work is going along under the control of an effective organization.

5. Medical relief and social medicine: It is felt generally by medical workers that it is impossible for most localities in China to afford the cost of scientific preventive and curative medicine. For this reason it is now being argued that state medicine is the only solution. The ministry of health is making a study of this matter and carrying out certain experiments. Experimental work is being done in the province of Hunan, and if it proves successful it is quite likely that state medicine will become an actuality throughout China. Various other experiments with social medicine are being tried by other organizations, both philanthropic and missionary. Active work along this line by the department in the country round about the capital during the past year has resulted in a total of 892,170 treatments and preventive measures.

6. Maternity and child health: A midwifery school has been established. It is the plan to introduce modern midwifery work throughout the country as rapidly as possible. In close association with this is child welfare work. Already a large number of centers have been opened.

7. Industrial health.

8. Epidemiology and vital statistics: The department is now receiving monthly returns from 600 different stations regarding epidemic diseases. The registration of deaths, births and marriages is rapidly becoming a routine procedure.

9. Health education: This work has been carried on longer than anything else and was started by mission medical organizations years ago. The government is now pushing it in a most effective manner. Models, charts and other illustrative material are being turned out at an enormous rate of production. These are being utilized all over the country in schools, hospitals and other public places in a manner that is making the people health conscious. The effect of these things is strikingly noticeable to those who have been in China for fifteen years or more.

All these departments are cooperating in the training of a personnel for the conduct of their work as it rapidly reaches out into new territory. Various groups of workers are being constantly trained. Some of these are as follows: public health medical officers (six months' course for experienced doctors); sanitary inspectors (six months); public health nurses (six months' course for graduate nurses); school teachers (one month); pharmacists (advanced course, two years); students in the central school of nursing (three years); students in the first and the central midwifery schools (two years).

On the wall of the department in Nanking is hanging a recent photograph of these various groups, which are now in training. There is a total of 538 individuals in the picture, and when one thinks of this as being developed in about two years' time, one must look with admiration on the wondrous achievements of the department of health, whose future looks bright.

Besides this training and work, which is being done in Nanking, the department is prepared to cooperate with all medical efforts along the lines of preventive and curative work. For instance, a mission hospital during the past summer undertook to give a two weeks intensive course on public health to all the school teachers of the district in conjunction with the school authorities. This mission hospital received the most enthusiastic cooperation and free help from the department in giving this instruction to nearly 200 school teachers.

It would probably be difficult to find in modern history any country where more rapid development of scientific medicine can be shown than in modern China. If the country can be saved from militarism and outside encroachments for a few years, the eyes of the medical world will be turned to China for the most striking example in public health work that has been accomplished anywhere.

ITALY

(From Our Regular Correspondent)

Oct. 30, 1935.

Proposed Changes in the Medical Curriculum

The superior council of the department of public instruction has approved the changes in the medical curriculum recommended by a committee of university professors appointed by the minister. The proposed changes are based on the principle that the subjects of instruction shall be divided into two groups, fundamental and supplementary, and are associated with the concept that the university must train the general practitioner, a physician who combines a good scientific mind with a knowledge of the essential needs of practice, and who is capable of deepening his knowledge and taking up specialties as time goes on.

There are twenty-one fundamental subjects recognized, and an examination in each is obligatory. There are fifteen supplementary subjects, for which only three examinations are required, the three to be chosen by the student. The complete medical course is subdivided into three two-year courses, termed the biologic course, the propedeutic course and the clinical course. The student will not be permitted to take up the studies of the succeeding two-year course until he has passed all the obligatory examinations of the present course.

In the first two-year course the present subjects of botany and zoology will be replaced by general biology, which will include genetics and racial biology. Physics and chemistry will be taught in special relation to medicine. The greatest range is given to anatomy and to physiology, in which the instruction is biennial, extending over the whole two years.

In the second two-year course, the student is trained in the methods of examining the patient and in the use of curative measures. The courses in general pathology and pathologic anatomy are coordinated with the two courses in special pathology. All these courses are biennial.

The third two-year course is devoted entirely to clinical instruction. The clinical courses, medical and surgical, are biennial. The courses in obstetrics and pediatrics cover but one year. The five other clinical subjects are completed in one semester, with not less than twenty-five lessons. Before graduation a student must serve one semester as intern in a large hospital.

Meeting of Medical Academy of Rome

At a recent session of the Accademia medica di Roma, presided over by the surgeon Prof. Roberto Alessandri, Professor Jura spoke on preoperative and postoperative glycemia, which he studied in numerous patients operated on for such disorders as appendicitis, hernia, cholecystitis and gastroduodenal ulcers. The examinations were made before the intervention and during the first ten days following, with repeated estimations on different days. In all the patients the preoperative glycemia was within normal limits; following the operation, changes occur depending on the nature of the disease and the condition of the patient. But, as a rule, within the first ten days there was a return to normal. The same investigator studied also the behavior of azotemia, chloridemia and the alkali reserve in eighty patients subjected to abdominal operations. During the ten to fifteen days following the intervention, the azotemia showed an increase in comparison with the preoperative values; the most conspicuous increase was observed the second day, with a return to normal after from six to eight days. When the course of the operation was normal, a reduction of the chloridemia corresponded to the increase in azotemia. In the cases in which intestinal paralysis or vomiting occurred it was found that, even before the intervention, the azotemic values tended toward the highest normal or were higher than normal. The postoperative chloridemia was normal or presented only a slight diminution. In such cases, after the operation no strict parallelism between azotemia and chloridemia was observed.

The alkali reserve is usually normal before the operation in patients with appendicitis and hernia, below normal in gastric and duodenal ulcers, and high in cholecystitis. After the operation it is lowered in cases of appendicitis and cholecystitis; it is increased in hernias and in ulcers. These variations were more enduring than those observed with respect to azotemia and chloridemia.

Professor Jura likewise studied in fifty-five patients with gastroduodenal ulcerative disorders the behavior of chloridemia and alkalosis in relation to gastric acidity, before and after the operation. It appeared that, taking especially into consideration the chlorine of the blood plasma and the corpuscles, in almost all the cases observed the chlorine values were a little below normal. After the operation there was an increase of the chloridemia. A similar behavior was noted with regard to the alkali reserve.

New Hospitals

The new hospital for infectious diseases was opened in Rome, October 28, on the Via Portuense. Located on a plot of about 35 acres, it is sufficiently removed from habitations but is easily accessible. The general services are entirely separate from the departments for infectious diseases, the fumigation plant being located between them. The departments for infectious diseases comprise the "casa dei contumaci" for gravely contagious diseases, with three pavilions of 130 beds each, which may be expanded to 200; an observation pavilion with a men's department and a women's department, each divided into four wards for various diseases, and five pavilions for the ordinary infectious diseases—one for paying patients.

The Association of Italian Clergy has acquired a large villa at Vigne d'Arco, where the first Italian sanatorium for priests will be located. Until now, members of the clergy affected with tuberculosis have had no sanatorium of their own. In France a well equipped sanatorium for priests has been functioning at Thorène for some time.

Exhibit of Old Medical Works

In connection with the numerous medical congresses to be held this year at Bologna, an exhibit of old medical books was organized. The organizer of the exhibit was Professor Sorbelli, director of the Biblioteca comunale di Bologna. The exhibit contained important medical works dating down through the sixteenth century to the time of Malpighi. Particularly noteworthy, and interesting for its antiquity, was a codex dating back to the thirteenth century, which was admired by Dante Alighieri for its magnificent miniature illustrations, from the hand of Franco Bolognese.

Marriages

EDWARD KESSLER, Greystone Park, N. J., to Miss Barbara Marilyn Newblatt of Brooklyn, Oct. 20, 1935.

HORACE J. HANSEN, Sheboygan Falls, Wis., to Miss Elizabeth Huibregtse at Oconto, Oct. 26, 1935.

MANLY E. HUTCHINSON, Columbia, S. C., to Miss Hildegarde Schroder of Charleston, Nov. 30, 1935.

LELAND FLOYD HOBBS, Jewell Ridge, Va., to Miss Catherine Jones of Tazewell, Nov. 30, 1935.

LYON STEINE, Valley Stream, N. Y., to Miss Jane Edna Shulof of New York recently.

ROBERT BRUCE HART, Hope, Ind., to Miss Margaret Sage of Brownstown, Nov. 28, 1935.

HERBERT PARSONS to Miss Margaret Worrall, both of New York, Nov. 30, 1935.

SIDNEY MOSKOWITZ to Miss Gladys C. King, both of New York, Dec. 29, 1935.

Deaths

Nathan Porter Colwell ⊕ for many years Secretary of the Council on Medical Education and Hospitals of the American Medical Association, died of cerebral hemorrhage at his home in Wilmette, Ill., January 6, aged 65 years. Dr. Colwell was born in Osceola, Iowa, May 25, 1870, and received his medical degree from Rush Medical College in 1900. He became associate instructor in otology at his alma mater and served at the same time as assistant dean in Rush Medical College.

In 1901 THE JOURNAL published its first Educational Number, which included a survey of American medical colleges, and in 1903 its first annual State Board Number. Apparently as a result of these surveys the House of Delegates of the Association was stimulated to the formation of the Council on Medical Education in 1905, and Nathan P. Colwell became its first secretary in 1906. From that time he made numerous contributions to the subject of medical education. As secretary of the Council he bore a large share of the responsibility for direct investigation and report on medical schools, for aiding the trend of discussions at the annual conferences on medical education, and for setting forth clearly the facts in relationship to medical education in the United States. He was also instrumental in organizing the Federation of State Medical Boards of the United States and drew up its first constitution, which was adopted in 1912. He aided in establishing the monthly bulletin of the federation and served as its managing editor until the time of his retirement as secretary of the Council on Medical Education and Hospitals in 1931. Each of the annual reports on medical education and on hospitals published by the Council on Medical Education and Hospitals during his tenure of office was drawn up under his personal supervision. Moreover, from 1904 to 1915 he compiled the statistics of deaths associated with Fourth of July accidents and did much in the campaign to lower this morbidity and mortality.

NATHAN PORTER COLWELL, M.D.
1870-1936

From 1913 to 1930 he was a collaborator of the United States Bureau of Education. During the World War his knowledge of medical education was put at the disposal of the United States Army and he served as contract surgeon in the office of the Surgeon General. He was a member of the Institute of Medicine of Chicago and of Alpha Omega Alpha.

During the twenty-five years of his work with the American Medical Association he rendered devoted service at a great sacrifice of his health and leisure. In 1931 he was retired and since that time had been living at home, concerning himself partially with the preparation of a history of medical education. He was an earnest and conscientious worker, devoted to the single purpose of raising standards in medical and hospital care. His temperament was judicial and his mind analytical. To him must be assigned a large portion of the credit for the persistent and steady advances made in medical education in this country during the past quarter century.

William Krauss ⊕ Meridian, Miss.; Memphis (Tenn.) Hospital Medical College, 1889; emeritus professor of tropical medicine, University of Tennessee College of Medicine, Memphis; dean and professor of pathology, clinical branch, medical department, University of Mississippi, Vicksburg, 1909-1910; professor of pathology and tropical medicine, College of Physicians and Surgeons, Memphis, 1906-1909; teacher of chemistry and histology, Memphis Hospital Medical College, 1891-1903, and assistant demonstrator in anatomy, 1889-1891; secretary of the board of health of Memphis, 1890-1893; acting assistant surgeon in the U. S. Public Health and Marine Hospital Service, as diagnostician, during the yellow fever epidemic in 1897-1898 and in 1905; fellow of the American College of Physicians; past president of the Memphis and Shelby County Medical Society; at various times on the staffs of the Memphis General, Baptist and St. Joseph's hospitals, Memphis; formerly research pathologist to the Western State Hospital, Bolivar; chairman of the National Malaria Commission and formerly chairman of the Tennessee Pellagra Commission; aged 74; died, Dec. 21, 1935, in the Gartly-Ramsay Hospital, Memphis, of carcinosis originating in x-ray burns of the hand.

C. Norman Howard ⊕ Warsaw, Ind.; Columbian University Medical Department, Washington, D. C., 1898; member of the American Academy of Ophthalmology and Oto-Laryngology; past president of the Kosciusko County Medical Society and the Indiana Academy of Ophthalmology and Otolaryngology; served during the World War; aged 60; died, Nov. 11, 1935, of coronary thrombosis and infection of the tongue.

Herbert Clayton Sumney ⊕ Omaha; Jefferson Medical College of Philadelphia, 1890; member of the American Urological Association; fellow of the American College of Surgeons; at one time professor of dermatology, syphilology and genitourinary diseases, John A. Creighton Medical College; formerly on the staff of the Douglas County Hospital; aged 65; died, Nov. 21, 1935, of cerebral hemorrhage.

Charles Francis Kuhn ⊕ Detroit; Michigan College of Medicine and Surgery, Detroit, 1901; member of the House of Delegates of the American Medical Association in 1917; fellow of the American College of Surgeons; past president of the board of education; medical director of the Warren Avenue Diagnostic Hospital; aged 65; died, Dec. 10, 1935, of acute dilatation of the heart.

Budd Van Sweringen ⊕ Fort Wayne, Ind.; University of Pennsylvania Department of Medicine, Philadelphia, 1888; served during the World War; formerly professor of theory and practice, Fort Wayne College of Medicine; at one time a city councilman; on the staff of the Methodist Episcopal Hospital; aged 68; died, Dec. 18, 1935, of cerebral hemorrhage.

Homer Riale Lathrop ⊕ Casper, Wyo.; Rush Medical College, Chicago, 1901; member of the House of Delegates of the American Medical Association, in 1911, in 1919 and in 1930; fellow of the American College of Surgeons; on the staff of the Memorial Hospital of Natrona County; aged 58; died, Dec. 4, 1935, of hemorrhage from a ruptured gastric varix.

Alvin T. Lipphard, Irvington, N. J.; New York Homeopathic Medical College, 1915; member of the Medical Society of New Jersey; aged 46; on the staffs of the Newark Eye and Ear Infirmary, Elizabeth (N. J.) General Hospital and the Irvington General Hospital, where he died, Nov. 14, 1935, of lobar pneumonia, following a ruptured appendix.

William Otis McBride ⊕ Fort Wayne, Ind.; Northwestern University Medical School, Chicago, 1903; member of the American Academy of Ophthalmology and Oto-Laryngology; oculist and aurist to the Duemling Clinic; was connected with the Lutheran Hospital in various capacities; aged 57; died, Nov. 5, 1935, of monocytic leukemia.

Wade Moss Gibson, Richmond, Ky.; Hospital College of Medicine, Louisville, 1897; member of the Kentucky State Medical Association; owner of a hospital bearing his name; aged 60; died, Nov. 8, 1935, in the Southern Baptist Hospital, New Orleans, of chronic myocarditis, thrombophlebitis of both legs and ulcer of the stomach.

James William Gray, Clarksdale, Miss.; Kentucky School of Medicine, Louisville, 1890; member of the House of Delegates of the American Medical Association in 1916; member of the Mississippi State Medical Association; formerly secretary of the school board; aged 70; died, Nov. 7, 1935, of a self-inflicted bullet wound.

Arthur Wildman ⊕ Brooklyn; Fordham University School of Medicine, New York, 1912; secretary of the National Association of Police and Fire Surgeons and Medical Directors of the Civil Service Commissions; served during the World War; aged 45; on the staff of the Jewish Hospital, where he died, Dec. 14, 1935.

Henry Marshall Fullilove ⊕ Athens, Ga.; University College of Medicine, Richmond, 1899; past president of the Clarke County Medical Society; on the staff of the Athens General Hospital; aged 58; part owner and medical director of St. Mary's Hospital, where he died, Nov. 17, 1935, of pneumonia.

Carlos Theodore de Rivas, Panama, Republic of Panama; University of Pennsylvania School of Medicine, Philadelphia, 1931; assistant in clinical pathology, Woman's Medical College of Pennsylvania, Philadelphia, 1933-1934; pathologist to the Santo Tomas Hospital; aged 30; died, Nov. 13, 1935.

Herman Benjamin Miller, St. Louis; Washington University School of Medicine, St. Louis, 1901; fellow of the American College of Surgeons; served during the World War; aged 56; on the staffs of the Deaconess Hospital and the Jewish Hospital, where he died, Nov. 16, 1935, of pneumonia.

Carl F. M. Mueller, Brooklyn; Bellevue Hospital Medical College, New York, 1893; member of the Medical Society of the State of New York; on the staffs of the Wyckoff Heights Hospital and the Bethany Deaconess Hospital; aged 71; died, Nov. 29, 1935, of coronary embolism.

Herbert D. Knapp, Flint, Mich.; Columbian University Medical Department, Washington, D. C., 1893; member of the Michigan State Medical Society; on the staff of the St. Joseph Hospital; aged 68; was killed, Nov. 10, 1935, when his automobile was struck by a train.

James Carlisle Moore, McColl, S. C.; Medical College of the State of South Carolina, Charleston, 1901; member of the South Carolina Medical Association; aged 57; died, Dec. 13, 1935, in an infirmary at Florence, of angina pectoris and pulmonary embolism.

Ralph H. Parker ⊕ Des Moines, Iowa; State University of Iowa College of Medicine, Iowa City, 1898; fellow of the American College of Surgeons; on the staff of the Iowa Methodist Hospital; aged 62; died, Nov. 13, 1935, of carcinoma of the pancreas.

J. Eaton Johnston, Santa Monica, Calif.; Chicago Homeopathic Medical College, 1891; Hahnemann Medical College and Hospital, Chicago, 1905; aged 90; died, Oct. 21, 1935, in a local hospital, of shock due to injury received in a fall, and arteriosclerosis.

Fenn John Hart, Phoenix, Ariz.; Eclectic Medical College of the City of New York, 1883; College of Physicians and Surgeons of San Francisco, 1901; veteran of the Spanish-American War; formerly mayor of Tempe; aged 76; died, Nov. 9, 1935.

Patrick Albert Smith ⊕ Faribault, Minn.; Jefferson Medical College of Philadelphia, 1893; past president of the Rice County Medical Society; on the staff of St. Lucas Evangelical Deaconess Hospital; aged 69; died, Nov. 27, 1935, of cerebral hemorrhage.

James Francis Prendergast, Steinauer, Neb.; John A. Creighton Medical College, Omaha, 1908; member of the Nebraska State Medical Association; aged 52; died, Nov. 15, 1935, at Pawnee City, of peritonitis and ruptured appendiceal abscess.

Reavill Millard Walden ⊕ Evansville, Ind.; University of Louisville (Ky.) School of Medicine, 1913; served during the World War; on the staff of St. Mary's Hospital; aged 46; died, Nov. 28, 1935, in Rochester, Minn, of cirrhosis of the liver.

Frederick Spencer Ball, Ontario, Calif.; University of the City of New York Medical Department, 1895; College of Physicians and Surgeons, Baltimore, 1904; aged 63; died in November 1935, of cerebral hemorrhage and malignant hypertension.

William Little Bradley ⊕ New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; aged 65; died, Dec. 19, 1935, in the Roosevelt Hospital, of injuries received in a street car accident.

Charles McDuffy Wilder, Washington, D. C.; University of Pennsylvania School of Medicine, Philadelphia, 1919; aged 41; died, Nov. 27, 1935, of subacute bacterial endocarditis following an accidental abrasion of his hand.

Clyde Martin Balsley ⊕ Joplin, Mo.; University of Louisville (Ky.) School of Medicine, 1915; on the staffs of the Freeman and St. John's hospitals; aged 46; was found dead in his office, Nov. 12, 1935, of heart disease.

Clinton L. Ayers ⊕ Kearney, Neb.; Lincoln Medical College of Cotner University, 1906; on the staff of the Good Samaritan Hospital; aged 58; died, Dec. 5, 1935, in Lincoln, of heart disease and cerebral atrophy.

William Burdick ⊕ Baltimore; University of Pennsylvania Department of Medicine, Philadelphia, 1907; supervisor of physical education in the state department of education of Maryland; aged 64; died, Dec. 21, 1935.

Carl Weiland, Wildwood Crest, N. J.; Jefferson Medical College of Philadelphia, 1890; member of the Medical Society of the State of Pennsylvania; aged 75; died, Nov. 15, 1935, of a gunshot wound, self-inflicted.

William Raymond Doctor, Des Moines; Marquette University School of Medicine, Milwaukee, 1915; on the staff of the Veterans Administration Facility; aged 48; died, Dec. 5, 1935, of coronary thrombosis.

Alice K. Brown, Wildwood, N. J.; Hahnemann Medical College and Hospital, Chicago, 1882; aged 87; died, Nov. 25, 1935, in the Sea Isle City (N. J.) Hospital, of valvular heart disease and arteriosclerosis.

Benjamin F. Crabtree, Dallas, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1910; member of the State Medical Association of Texas; aged 62; died, Dec. 3, 1935.

Samuel B. Miller, Fort Worth, Texas; American Medical College, St. Louis, 1908; member of the State Medical Association of Texas; aged 55; died, Oct. 31, 1935, in a local hospital, of coronary occlusion.

William Edward Young, Three Forks, Mont.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1882; also a pharmacist; aged 80; died, Nov. 11, 1935, of coronary occlusion.

Seth Willard Coy, Boston; Boston University School of Medicine, 1889; aged 72; died, Nov. 28, 1935, in the Winthrop (Mass.) Community Hospital, of injuries received when struck by an automobile.

William Henry Mountain ⊕ Olean, N. Y.; University of Buffalo School of Medicine, 1898; physician in charge of the Mountain Clinic; aged 59; died, Nov. 27, 1935, of cardiovascular renal disease.

George Andrew Miller ⊕ Hudson, Ohio; Tufts College Medical School, Boston, 1908; served during the World War; formerly member of the board of health; aged 60; died, Dec. 11, 1935.

Philip Herbert Federman, Newark, N. J.; Illinois Medical College, Chicago, 1902; member of the Medical Society of New Jersey; aged 56; died, Nov. 26, 1935, of coronary occlusion.

Matilda Arabelle Evans, Columbia, S. C.; Woman's Medical College of Pennsylvania, Philadelphia, 1897; aged 66; died, Nov. 17, 1935, of nephritis and cerebral hemorrhage.

Edward Morrish, St. Louis; Beaumont Hospital Medical College, St. Louis, 1900; aged 63; died, Nov. 27, 1935, in the Missouri Baptist Hospital, of diabetes mellitus.

Lucian L. Noble, Holmesville, Neb.; Northwestern Medical College, St. Joseph, Mo., 1894; aged 64; died, Nov. 11, 1935, in the Beatrice (Neb.) Sanitarium, of malaria.

Edward Henry Thompson, Hampton, N. H.; Dartmouth Medical School, Hanover, 1896; member of the New Hampshire Medical Society; aged 72; died, Nov. 20, 1935.

James David Stalsby, Crosby, Texas; Memphis (Tenn.) Hospital Medical College, 1898; formerly chairman of the school board; aged 64; died, Nov. 1, 1935.

Clarence E. Neipling, Philadelphia; Medico-Chirurgical College of Philadelphia, 1911; aged 47; died, Nov. 7, 1935, of emphysema and dilatation of the heart.

George Lawson Wilkins ⊕ Baltimore; University of Maryland School of Medicine, Baltimore, 1870; aged 84; died, Dec. 14, 1935, of bronchopneumonia.

John L. Cottrell, Elizabethton, Tenn.; Maryland Medical College, Baltimore, 1900; aged 65; died, Nov. 24, 1935, of cerebral hemorrhage.

Martin S. Cramer, Ohio City, Ohio; Starling Medical College, Columbus, 1888; aged 73; died, Dec. 15, 1935, of cerebral hemorrhage.

Albert Chester Hanson, Portland, Ore.; University of Oregon Medical School, Portland, 1905; aged 54; died in November 1935.

John Donald Cunningham, Alliston, Ont., Canada; University of Toronto Faculty of Medicine, 1909; aged 63; died, Nov. 17, 1935.

James T. Morris, Stanford, Ky.; University of Louisville Medical Department, 1889; aged 74; died, Nov. 5, 1935, of heart disease.

Robert M. Kuglar, Conley, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1905; aged 66; died, Oct. 8, 1935.

Edwin Thomas Hall, Fullerton, Calif.; Kentucky School of Medicine, Louisville, 1893; aged 70; died, Nov. 7, 1935.

Lord Byron Barnes, Tulsa, Okla.; Barnes Medical College, St. Louis, 1907; aged 50; died, in November 1935.

John Walter Hodges ⊕ Miami, Fla.; Baltimore Medical College, 1892; aged 78; died, Nov. 27, 1935, of nephritis.

Joel Bartleson Million, Newby, Ky.; Hospital College of Medicine, Louisville, 1906; aged 56; died, Nov. 19, 1935.

Cuvier Robb Marshall, Springfield, Pa.; Bellevue Hospital Medical College, 1885; aged 73; died, Nov. 16, 1935.

Bureau of Investigation

INTERNATIONAL RESEARCH LABORATORIES, INC.

Nicholas R. West and His Consumption Cure "Resla"

During the past three or four years the Bureau of Investigation has received inquiries regarding an alleged cure for consumption exploited by the International Research Laboratories, Inc., which is apparently a trade name used by one Nicholas R. West, who has his office in the Hobart Building, San Francisco, Calif. It may be said at the outset that Nicholas R. West is not a graduate of any reputable medical school or licensed to practice medicine in any state in the Union, nor, so far as we know, has West ever held himself out as a physician.

In April, 1931, when West and his remedies were first brought to the attention of the Bureau, a letter was written to Dr. C. B. Pinkham, Secretary-Treasurer of the Board of Medical Examiners of the State of California, asking for information on the man. Dr. Pinkham assigned an investigation of West to one of the efficient special agents of the Board of Medical Examiners of California. The agent reported that he had a personal interview with Nicholas R. West and that West had stated that he was born in Russia of a Russian father and a German mother. He is also said to have claimed that he was a graduate in chemistry of the University of St. Petersburg and had done post-graduate work in other European institutions. It may be stated incidentally at this point that we have been unable to find the name of Nicholas R. West in the membership list of the American Chemical Society.

West is said to have told the agent of the board, further, that he came to San Francisco at the close of the Russo-Japanese war and had resided in that city ever since. To quote from the agent's letter to Dr. Pinkham:

> "He [West] states that he has a remedy with which he has cured himself of tuberculosis, which is used as an inhalant that will absolutely inhibit and destroy tuberculosis and he has written to Henry Ford, the Rockefeller Institute and to President Hoover, offering his remedy free of charge to any reputable institution that will give it a fair trial and that he does not have it for sale at the present time; that he claims 100% cures in incipient tuberculosis and a large percentage of cures in more advanced cases; that he has had his remedy tried out under the supervision of physicians and surgeons, both here and abroad, whose names he declined to give and that he has records of over 400 cures."

About the same time the San Francisco Tuberculosis Association turned its attention to consumption-curer West. Mr. Paul Neiman, General Secretary of that association, interviewed West, and in a letter has given the results of the interview. In addition to finding out that West was a native of Russia, be learned through an application for a marriage license that West was about fifty or fifty-one years old at that time (1931). Mr. Neiman also ran through a file of San Francisco city directories. In 1913 one N. R. West appeared as being with the Union Oil Company, and this listing continued until 1916, when the names Nicholas R. West, chemist, and the Nicholas R. West Laboratory were listed. These continued to appear until 1920, at which time West's name appeared in the classified section under "Oil Refiners." At that time, apparently, West was using the trade name Master Refining Company and was exploiting "Master Oils." This listing also continued until 1926. In 1927 and 1928 the name Nick R. West appeared as manager of the Master Candle Company. In 1929 the same name was given as bookkeeper for the Master Candle Company. In 1930 the name appeared "Nicholas R. West, Investment Securities," with an office at 582 Market Street and a residence at the Union League Club.

Mr. Neiman reported further: That West told him that when he came out of the Russo-Japanese war he had tuberculosis, of which he eventually cured himself; that a reputable physician of San Francisco who specialized in tuberculosis had suggested that West might make some demonstration in the physician's laboratory, but this West was unwilling to do; that West claimed his "treatment" was introduced into the lungs, where it killed the germs!

A statement reported to have been made by West both to Mr. Neiman and to the agent for the California Board was that West had declared that the report published fifteen years previously (1915) in the *Daily Commercial News*, a San Francisco paper, to the effect that West had discovered a cure for tuberculosis, was premature and that it was not until March, 1931, that he was thoroughly convinced that his treatment was perfected. Nevertheless, in August, 1931, West was sending out reprints of the 16 years old *Daily Commercial News* item as part of his advertising ballyhoo. The item stated, among other things, that West was formerly a chemist for the Russian government and was in San Francisco on "leave of absence," which had been extended by the government of the Czar to West.

One of West's methods of publicity has been to write letters to various wealthy men and organizations, in the hope, apparently, that financial aid would be given him. West is said to have remarked of his "cure" that "there could be enough money in it to make millionaires out of fifteen men."

Following the investigation in 1931 by the Board of Medical Examiners of California, nothing was heard from that source until November, 1933. At that time the board's agent reported to Dr. Pinkham that he was now in possession of documentary evidence, including canceled checks and other material that proved, not only a violation of the section of the California law that prohibits unqualified persons from practicing medicine, but also showed a conspiracy to violate the terms of the medical practice act. It appears that West had been treating a seventeen-year-old boy for pulmonary tuberculosis. In October, 1932, the lad was attending high school when he had a hemorrhage, for which he was treated by a reputable physician, who advised that he go home, where he could have a rest for a considerable period of time. In the meantime the boy's aunt was alleged to have heard a radio broadcast from West's organization relative to the alleged cure, and she advised the boy's mother to get in touch with West. Subsequently West is said to have called on the family and to have assured them that he could cure the boy, and to have stated in a letter written in April, 1933, that the boy would be cured within six months. The state, however, had a death certificate showing that the boy had died of pulmonary tuberculosis in less than six months!

The board's agent reported, further, that West had prescribed remedies of his own selection, examined X-ray films furnished him by the mother of the boy, and in other ways obviously practiced medicine within the meaning of the act. There was also evidence to show that someone representing himself as "H. W. Davidson" from the so-called International Research Laboratories, Inc., the trade name used by Nicholas R. West, purchased supplies of medicine from Boericke and Runyon of San Francisco and relabeled them as "Resla" products, purporting to be the "natural elements" discovered by Nicholas R. West. In addition, "H. W. Davidson" is said to have purchased remedies from the Frederick Stearns Company, San Francisco branch, which, in turn, were sent out as products of the International Research Laboratories.

The state authorities proceeded against West, and in a jury trial in Department 12 of the Superior Court, Superior Judge I. L. Harris presiding, on June 20, 21 and 22, 1934, Nicholas R. West and "H. W. Davidson" went on trial following a grand jury indictment for conspiracy to violate the medical practice act. Unfortunately, the case fell to pieces when it was brought out in court that "H. W. Davidson" did not exist, but was a name used by Nicholas R. West. Incidentally, it was developed that an affidavit made by West in 1932 pursuant to the demand of Dr. Pinkham of the Board of Medical Examiners for the names of persons associated with the International Research Laboratories was a perjured affidavit in that West appeared before a notary public and made affidavit that he, H. W. Davidson, was president of the International Research Laboratories, and executed and signed the affidavit as H. W. Davidson.

Correspondence

PNEUMOCOCCIC MENINGITIS

To the Editor:—In THE JOURNAL, Dec. 7, 1935, two authors report cases of pneumococcic meningitis with recovery following different methods of therapy. While it is certain that both patients had meningitis, it is by no means proved that the pneumococcus was the cause in either. In both cases the etiologic diagnosis was based solely on the recovery of gram-positive diplococci in the spinal fluid. Observers of long experience know that it is impossible to differentiate pneumococci from certain other cocci on a morphologic basis alone. To identify pneumococci as such it is necessary to test the character of growth on blood-agar, the bile solubility and mouse virulence, and to determine to which serologic type the organism belongs. From recent studies it is known that practically all strains of pneumococci can be classified into one of thirty-two recognized types by fairly simple technic.

Unless authors exercise more care in the etiologic diagnosis of infections in general and of meningitis in particular, or refrain from applying unqualified positive terms to unproved diagnoses, reports of cases of this kind merely serve to encumber the literature and statistics with misleading data.

HOBART A. REIMANN, M.D., Minneapolis.

TREATMENT OF COMMINUTED COLLES' FRACTURE

To the Editor:—In re Dr. Haggart's report on the treatment of comminuted Colles' fractures in THE JOURNAL, November 30, I do not doubt that his results represent the peak of achievement in the present methods of treating these fractures. This is true despite the differences of opinion as to treatment among those who discussed his paper.

Possibly in no other class of fractures is nature more considerate of the surgeon's inefficiency than in its overcoming his shortcomings in these cases.

If Dr. Haggart, instead of showing a roentgenogram fifteen months after injury had shown the roentgenogram taken immediately after reduction, presenting also the roentgenogram of the normal wrist for comparison, he would have supplied a better measure of the efficiency of his treatment.

My experience with these cases has convinced me that manual traction, various flexions and the postural splinting are but child's play.

At the recent session of the American Medical Association Dr. Magnuson stated that from the earliest known manuscript to the present time the principles of treatment of fractures have not changed. He need not have been so recent. Doubtless the first Neanderthal hunter who broke his leg in the chase implored his companions to pull it straight and bind it up with sticks and pliable roots. This principle of treatment dominates in most of the fracture practice of today.

Extension and immobilization of the fracture are fundamental necessities. However, the practice of these powers is still in the elementary plane. It seems that the demand for a more advanced grade of applied mechanics is distasteful to medical men.

Modern textbooks are given to dogmatic statements as to the best methods of treating individual fractures. All unite in proclaiming that certain fractures will demand special treatments. However, an investigation will disclose that there is no unanimity as to the special treatment required. All fail in giving any commensurate space to the discussion of the virtues of the mechanical details.

The idea of studying the body framework, skeletal and superficial, as it lends itself to the application of more efficient corrective powers fails to register. The present splint armamentarium is totally deficient to utilize these better powers. They seem to be considered all that can be hoped for. A splint equipment possessing these powers and adaptable to each fracture encountered is imperative.

My labors have been spent in the development of what has become a very simple and inexpensive splint equipment. For any limb fracture the splints can be assembled to exercise definitely planned and measured nonoperative skeletal traction and countertraction, lateral control and immobilization of the fracture. They give, in fact, smooth human machine shop control and efficiency. "Human" means a better regard for the physiologic, functional and tissue vitality of the parts.

Of course Dr. Kennedy and all the others need an anesthetic. My splints never need an anesthetic in simple fractures of any long bone.

HARVEY C. MASLAND, M.D., Philadelphia.

A DIAGNOSTIC SIGN FOR VIABILITY OF THE FETUS

To the Editor:—During the past few years I have been employing, along with the other better known signs of death of the fetus in utero, a test that I have not seen described. In rectal or vaginal examination on the pregnant woman with a fetus past the period of viability, gentle pressure on the head will stimulate immediate and rather vigorous fetal movements. In cases in which the baby is thought to be dead because of failure on the part of the mother to feel fetal movements, because of the inability to hear fetal heart sounds, because of the failure of the uterus to grow or because there have been other signs pointing to an unfortunate outcome, this test has proved of definite value. Active fetal movement is regularly provoked by using this simple maneuver when the baby is alive, while the failure of fetal response to this manipulation has settled, in several instances, the question of fetal death in cases in which even roentgen examination was inconclusive.

I was recently impressed with another application of this test. A question arose as to the definite diagnosis of presentation in a patient in active labor. The differential diagnosis between face and breech presentation could not be made by abdominal and rectal palpation, but the failure of the fetus to respond to gentle pressure on the presenting part led to a diagnosis of breech presentation. This was verified as the labor progressed.

The general application of this simple test will act, in many cases, to settle the question of death or presentation of the fetus.

AARON E. KANTER, M.D., Chicago.
From the Department of Obstetrics and Gynecology, Rush Medical College of the University of Chicago.

SKIN GRAFT

To the Editor:—In the Davis modification of the Reverdin skin graft, the technic usually described calls for many hemostats, needles and two or more assistants.

I have recently used a technic that calls for only a hypodermic syringe, a knife, a thumb forceps and an office nurse as assistant, making this an office or home operation if necessary.

After the anesthetic solution has been injected, the needle is allowed to remain to fix the point in skin to be excised by the knife; with thumb forceps the graft is removed from the hypodermic needle by the nurse and placed on the prepared granulations.

By this technic the hypodermic needle is in no danger of contamination by contact with the granulating surface and one needle can be used throughout the operation.

R. R. SULLIVAN, M.D., Lakeland, Fla.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

TREATMENT OF SCIATICA

To the Editor:—Are mud baths of any therapeutic benefit in sciatica? Are there any reliable places you could recommend? I have a patient (a man, aged 51) who suffered from sciatica four years ago. He gradually was relieved. For some months past he has had pain along the same sciatic nerve on standing but is relieved by rest in bed. All tests, Wassermann, urine, blood pressure and nutrition, are normal. Could you give me any suggestions? JAMES H. ROSECRANS, M.D., Hoboken, N. J.

ANSWER.—Sciatica should be regarded as a symptom, not as a disease. Although it occurs without demonstrable cause it is often secondary to disease of the lower part of the spinal column and pelvis, particularly arthritis and fibrositis. If a roentgenogram reveals hypertrophic arthritis of the lower lumbar vertebrae or sacro-iliacs, it may be necessary to use physical therapy and to reduce the trauma of activity and weight bearing to the affected areas by the application of a properly fitting support. The fact that the patient is relieved when in bed but has pain on standing suggests that factors of postural trauma are present regardless of whether other agents, such as infection, are operating or not. Reduction of trauma and the use of a support would therefore be expected to give some relief.

The treatment of sciatica in general first consists of rest in bed, heat, and the use of analgesics. Various forms of heat and other types of physical therapy are helpful, among them mud baths; but simpler measures, more readily available, are preferred, such as the use of hot compresses, a "baker," or diathermy. Immobilization of the lower part of the spine by strapping with adhesive plasters or the use of a cast for a short period may be necessary. Epidural injections are sometimes of value.

A combination of therapeutic procedures is more likely to give relief than reliance on one measure alone, according to the experience of Craig and Ghormley (THE JOURNAL, April 15, 1933, p. 1143), who analyzed results of treatment in 159 cases of sciatic pain. Of these patients, 177 were ambulatory and forty-two bedfast. In the former group of eighty treated with epidural injections alone, only 52 per cent were completely relieved. Obviously other measures are indicated. Diathermy alone completely relieved 33 per cent of thirty-six patients; a belt and diathermy completely relieved 33 per cent of fifty-two patients. Injections and diathermy helped more, but the best combination was the use of epidural injections, diathermy and a belt, by means of which 85 per cent of the group so treated were completely relieved. Of those confined to bed, 86 per cent of twenty-eight patients were completely relieved by the use of a double Buck's extension, diathermy, epidural injections, intravenous foreign protein, and removal of foci. Of fourteen patients treated similarly, except that epidural injections were omitted, 63 per cent were completely relieved. Thus epidural injections gave added relief. From 40 to 60 cc. of a 1 per cent solution of procaine hydrochloride seem favored.

SUGGESTION TREATMENT AND WARTS

To the Editor:—What is there to the claims that warts can be removed by suggestion? Several physicians have asked me what it meant, and I have replied that I supposed it was all a mistake that had inadvertently gotten into THE JOURNAL. But, after the apparent confirmation in a recent issue, it begins to dawn on me that there is something behind it all. Please enlighten me. J. W. DUNN, M.D., Cairo, Ill.

ANSWER.—Warts are benign epithelial growths caused by infection and inoculable, as Jadassohn demonstrated in 1895. They are caused by a filtrable virus, which was demonstrated by Serra and confirmed by Wile and Kingery and others. The incubation period is long, from four weeks to twenty or more months, and the inoculation must be made into the epidermis or there will be no take.

As Prof. Bruno Bloch writes (Ueber die Heilung der Wartzen durch Suggestion, *Klin. Wchnschr.* **6**:2271 [Nov. 26], 2320 [Dec. 3] 1927) "It is a general belief of the people of all nations that warts are curable by suggestion. There is hardly another disease in which the belief in the value of suggestion is so strong. There is no doubt that warts of many years' duration can disappear over night, spontaneously. The results of suggestion cannot, however, be laid to this alone."

Professor Heim, a Swiss geologist, as a boy, about 1862, saw his father cure the warts on the hands of his little sister by pointing to them and saying for each, "This one goes away." Years later, when his son was afflicted and the warts did not yield to caustic treatment, Professor Heim attempted suggestion and was successful. He first treated the warts on one hand. As they disappeared in four days he treated the warts on the other hand, and in four days the warts on the face. After that he treated many people with a good measure of success. One resistant person he had to hypnotize in order to cure. He always felt that unless he could embarrass the patient he would not obtain a cure. Stupid children he could not cure. After the age of 60 he gave up the attempt as the effort was too great.

Two things are necessary for such cures: the conviction on the part of the physician that the method is successful and, on the part of the patient, a distinctly emotional condition.

Bonjour, a neurologist of Lausanne, treated warts by this method and claims no failures. He made no detailed report, but his veracity is not questioned. Because they can be cured by suggestion, Bonjour thought that warts are of nervous origin.

Because of these reports, Professor Bloch, dermatologist of Zurich, became interested and treated many cases. His success with this method was as great as with any other method, medical or surgical. There were 179 cases in his series in which follow up was possible. Of common warts he was able to cure 44 per cent, of the flat juvenile variety 88.4 per cent. Forty-three per cent of the cures occurred in the first month, 39 per cent in the second month and 18 per cent after two months. Most of these cases had been treated by other methods without success. In one case the mother reported that all the warts swelled up a few days after the treatment and that some of them still showed blood crusts when observed by the physician. In four weeks all were gone except a few filiform ones on the lips and about the nostrils. These disappeared during the second month. K. G. Zwick (Hygiogenesis of Warts Disappearing Without Topical Medication, *Arch. Dermat. & Syph.* **25**:508 [March] 1932) uses this fact of hemorrhage in warts after psychotherapy to support his theory that such treatment acts by dilatation of blood vessels, just as emotion causes blushing.

Professor Bloch devised a more complicated procedure than that used by Professor Heim. After carefully examining the wart he blindfolds the patient and leads him into an adjacent room, where he places him with his hands spread out, if the hands are involved. He then draws an outline of the hand, drawing in each wart life size. Then he starts a machine, which produces some noise but makes no connection with the patient. He then paints each wart with some vivid color, red, green or blue, leads the patient back to the consultation room, removes the blindfold, and orders that the color be not removed from the warts or the treatment will be less effective. The patient is asked to return in two weeks and is kept under observation for several months.

One patient treated by Professor Bloch was a neurologist who was told that he would be treated by suggestion. He was indignant and expressed his disbelief in any such treatment but submitted because of his great desire to lose the warts. In spite of his disbelief and to his great astonishment, all the warts disappeared in two weeks. From the dermatologic standpoint, this is a delectable history.

Bloch proposes and answers the following objections: 1. That the series is too small to prove anything. He answers that, because of the large percentage of cures, it is large enough.

2. That the coloring matter may have exerted a chemical effect. Several different colors were used intentionally to overcome this objection. None of the colors are known to have any direct effect.

3. That a part of the cases were cured. Answer: As many as by any other method.

4. That the cures were due to spontaneous healing. There is such a thing as spontaneous healing of warts. Every one knows that, but there could not be so high a percentage at any one time. If, after any treatment, warts that have been present for months or years and have been treated in many ways without effect disappear within two to eight weeks, one is logically bound to grant a causal connection between the treatment and the cure. There are no statistics on spontaneous cures.

Memmesheimer and Eisenlohr attempted to assemble such statistics (Untersuchungen über die Suggestivbehandlung der Wartzen, *Dermat. Ztschr.* **62**:63, 1931). They ran two series, one of those treated by suggestion, the others of those sent away without treatment. Their success with suggestive treatment was not so great as Bloch's, and they found that of those sent away without treatment about as many were well in six months as in the series of treated cases. Among the latter, however, the cures were more prompt and there were more cures among adults.

Of twenty-eight patients under 10 years of age, the warts of ten cleared spontaneously, 35.7 per cent.

Of twenty-five patients from 11 to 20 years, the warts of six cleared spontaneously, 25 per cent.

Of seventeen patients over 20 years of age, the warts of four cleared spontaneously, 23.5 per cent.

After suggestion: Of thirty-one patients under 10, four were healed, 12.9 per cent. Of twenty-two patients between 11 and 20, six were healed, 26.8 per cent. Of seventeen patients over 20, seven were healed, 41.2 per cent.

While these figures are not large, they present a most interesting problem. Is Bloch's claim admissible that the very act of dismissing the patient without treatment may be suggestive? More likely the suggestion occurred at the later visit of the physician or his assistant at the patient's house to get further data no matter how casual he tries to make his examination. This would fit in with the fact that the so-called spontaneous healing occurred in most cases later than the suggestive cure.

The facts of the suggestive therapy of warts seem to make a strong case in favor of the reality of such a process.

1. The physician must have confidence. Professor Jadassohn of Bern, who first demonstrated that warts are inoculable, tried the psychotherapy of warts for twenty years without success until convinced by Professor Bloch that it is a genuine cure. Then he could succeed also.
2. When the physician is hurried, ill or tired, his results are not good.
3. Some physicians get better results than others.
4. Stupid persons are harder to cure in this way.
5. The method has been repeatedly successful in cases that have resisted many other methods and even previous psychotherapy.
6. As Sulzberger and Wolf (*M. Rec.* **140**:552 [Nov. 21] 1934) say, a wart is an excellent subject to demonstrate the cure on, for it does not depend on any impression or feeling of the patient or on indirect physical or chemical methods of demonstration. It is a pathologic tissue caused by infection, and the proof of its cure by psychotherapy should be a great stimulus to the wider use of the method. Heim, Bloch, Bonjour and many others have demonstrated that the sometimes harmful hypnotism is not necessary, and that the cure can be effected at times on the most skeptical.

TREATMENT OF ACUTE GONORRHEAL URETHRITIS AND OF GONORRHEA IN WOMEN

To the Editor:—In a new case of acute gonorrheal urethritis, is it not better treatment to abstain from urethral instillations for a week or ten days? What is the best and accepted treatment for acute gonorrheal urethritis? Instillations of strong protein silver after about a week and continued once daily for a period of about a month, provided there are no complications? Then the use of astringents? Copper sulfate? If properly handled, should there be any complications? What will determine a cure? How soon will it be safe to have sexual intercourse again? How soon will it be safe to have intercourse with a woman again whom the patient inadvertently infected? Granted that a cure in a woman, if ever accomplished, is more prolonged than in a man, and therefore if the aforesaid man who had inadvertently infected the woman and the urethral discharge from the man cleared up prior to the discharge from the vagina from the woman, can the man be reinfected by intercourse with this woman? Is a woman with chronic nongonorrheal cervicitis and cystic ovaries likely to become infected with gonorrhea more severely? What is the best and accepted treatment of gonorrhea in a woman? The woman in question has not yet shown any symptoms of gonorrhea. Please omit name.

M.D., Missouri.

ANSWER.—In a new case of acute gonorrheal urethritis, early treatment and care are advisable. The patient must be warned about the importance of abstaining from alcohol and all forms of sexual excitement, and the importance of cleanliness. In the male, an acute anterior urethritis may be treated immediately with daily urethral (anterior only) irrigations with a mild, 1:8,000, potassium permanganate solution and instillations of any of the milder silver solutions (5 per cent mild protein silver, from 0.25 to 0.5 per cent strong protein silver or 5 per cent neosilvol). If the infection is anteroposterior, as denoted by cloudiness in both glasses of urine, the necessity of mild treatment must be stressed. No local treatment, except some mild anterior urethral instillations, is perhaps best until the second glass of urine is clear. When this occurs, through and through irrigations with the permanganate solution may be instituted. When both urines are clear, regular prostatic massage should be started and continued for two or three months, as necessary.

A cure should depend on the absence of discharge, crystal clear urine, and negative prostatic secretion. When this results, a good therapeutic test of cure is found by the patient taking some alcohol by mouth. No reaction to this is sufficient evidence to suggest cure when all physical signs are negative. Intercourse should never be attempted for three months after a supposed cure without the protection of a condom. It is no safer to have intercourse with the woman this man infected than with any other woman who recently had gonorrhea. The man may be reinfected with the same organism he passed on to her.

Chronic nongonorrheal cervicitis may allow a little earlier penetration of the gonococci but should not necessarily produce a more severe infection. Cystic ovaries play no part.

The treatment of gonorrhea in the female depends, of course, on its location. The urethritis should be treated by gentle massage to empty the ducts, followed by the instillation of any of the mild solutions, as used in the male. In a persistent skenitis, cauterization of Skene's glands may be necessary. Cervicitis in the acute state should have no active local treatment other than warm low pressure douches with a mild, 1:8,000, potassium permanganate solution. When the acute stage has subsided, tampons to the cervical os and vaginal tampons are of value. The use of hyperpyrexia in females is of the greatest value and should be resorted to whenever possible.

PARENCHYMATOUS MENINGOVASCULAR NEUROSYPHILIS

To the Editor:—About two years ago a married man presented himself at my office with a genital lesion of two weeks' duration. He admitted extramarital relations. A Wassermann report the next day on his semen was 4 plus. I convinced him of the necessity of taking a Wassermann test on his wife. The first Wassermann test was negative but the Eagle flocculation was positive. A repeated Wassermann test the next week was positive, as was the Eagle test. Both husband and wife received three courses each of neoarsphenamine and a bismuth compound. Each series consisted of eight intravenous injections of neoarsphenamine 0.6 Gm. and 2 cc. of bismuth in oil. At the end of the first course of neoarsphenamine the serologic reaction in both patients became negative. There were no rest periods and at the end of six months they would not permit any lumbar puncture. At the end of the third course of bismuth they refused further treatment and again refused lumbar puncture. The serologic reaction remained negative. During the entire treatment, which took about forty-eight weeks, reactions to neoarsphenamine never developed, no secondary eruption appeared, and the patients were in good physical condition, as ascertained prior to the starting of the syphilitic treatment. About a week ago the wife presented herself at my office, complaining of headache and diplopia. The history of the present illness dates back four days prior to her present visit. There was some dull pain along the muscles of the back of her neck, which radiated up toward the base of the occiput. The pain was aggravated on motion, but there was no stiffness nor was the condition preceded by an infection of the upper respiratory tract. She used some acetylsalicylic acid and was symptomatically relieved. Three days after the onset of the pain she awoke one morning with a pain over the left orbit, double vision and internal strabismus. The following day she decided to consult me as to the likelihood of the condition being the result of her syphilitic infection. I immediately made a Wassermann test, which was reported negative. She refused to permit a lumbar puncture. Neurologic, ophthalmologic and physical examinations were all negative except for involvement of the third nerve. Finally she was convinced of the necessity of a spinal puncture and reluctantly agreed. This was done, and the following is a report from the laboratory:

Mastic, 3321000.
Cells, 20.
Protein, 37.
Globulin, +.
Wassermann reaction negative:

0.2	0.05	0.016	0.008	0.004	0.002
++	++++	++++	++++	++++	++++

I was rather surprised at the report in view of the early treatment, practically adequate amount, the rapidity of involvement and the negative blood Wassermann reaction. Am I correct in considering this form of central nervous system syphilis a meningovascular type though the Wassermann reaction suggests more the paretic type, while the colloidal mastic is approaching a paretic curve? The patient has no psychotic symptoms and is well aware of her condition. I have decided to use tryparsamide and a bismuth compound, giving ten or twelve injections of the former in 3 Gm. doses at weekly intervals and 2 cc. of the latter either at the same time as the tryparsamide or several days after each intravenous injection. Potassium iodide in 15 grain (1 Gm.) doses three times a day gradually to be increased is also going to be prescribed. At the end of the twelfth injection of tryparsamide, I intend to make a lumbar puncture, and if there is evidence of serologic and symptomatic improvement to permit her a rest period of six or eight weeks, after which I intend to resume treatment. Of course, prior to treatment and about every four weeks during treatment examination of the eyes for visual acuity and perimetric fields will be made. I would appreciate your criticism of this treatment and any suggestions you may offer. Over how long a period must the treatment with tryparsamide be continued, including the interval rest periods? Do you think malarial treatment is indicated instead? How soon may I expect relief from the orbital pain, and what is the prognosis as to the restoration of the eye from the present condition of internal strabismus?

M.D., Maryland.

ANSWER.—Headache and diplopia followed in a few days by pain in the orbit, double vision and internal strabismus with a history of a syphilitic infection a year previous is a typical clinical picture of early parenchymatous meningovascular neurosyphilis. The spinal fluid tests confirm this diagnosis. The

proposed course of treatment with tryparsamide and a bismuth compound with a periodic check up for visual acuity is an excellent plan for this type of neurosyphilis. It is a general axiom that the clinical outcome is in inverse ratio to the duration of the disease and to the amount of preexisting damage. Complete return of the abnormal spinal fluid to normal cannot be expected in more than 50 to 60 per cent of the cases even with persistent treatment. From thirty to forty injections of tryparsamide should be administered if necessary along with large doses of iodides. Relief from the orbital pain should be prompt. The internal strabismus will probably be permanent. Much depends on whether the paralysis is partial or complete. Malaria therapy is indicated only in case of failure of clinical improvement or in case the cell count and spinal fluid Wassermann reaction fail to return to normal. The following recent article on tryparsamide therapy may be consulted: Cormia, F. E.: Tryparsamide in Treatment of Syphilis of Nervous System, *British Journal of Venereal Diseases* **10**:99 (April) 1934.

ADIPOSOGENITAL DYSTROPHY

To the Editor:—I have a patient (a white man, aged 22) who was examined in a hospital clinic in June 1934 and the diagnosis was hypothyroidism (?) and unrestrained appetite. He was advised to take 1 grain (0.065 Gm.) of desiccated thyroid three times a day and follow a 1,200 calory diet. The basal metabolic rate was —13, hemoglobin 88 per cent, roentgen examination negative, and the urine normal. A feminine distribution of weight was found. The height was 5 feet 7½ inches (170 cm.), the weight 207 pounds (94 Kg.). The genitals are small but not atrophic. There is a history of family obesity. The hair is thick on the head but thin elsewhere. The blood pressure is 124 systolic, 78 diastolic. The reflexes are normal. The patient had infantile paralysis at 18 months of age. The patient's tolerance for thyroid was less than half a grain three times a day, the blood pressure rising to 140 and descending when thyroid was discontinued. He has reduced 32 pounds (14.5 Kg.), his present weight being 175 pounds (79 Kg.). The patient's breasts appear to be as large as they were before he reduced and he states that they are embarrassing to him when he does not wear a coat in public. What treatment, if any, should I administer? Would preparations of the anterior pituitary be advisable? I would appreciate any information you see fit to give me. Kindly omit name and town.

M.D., North Carolina.

ANSWER.—From the description given this patient may have a mild form of adiposogenital dystrophy. The breast enlargement then is probably due to adipose rather than lactic gland tissue. Two lines of attack should be tried: (1) the administration in 100 rat unit dosage, subcutaneously, three times a week for six weeks of pregnancy urine extract (either antuitrin-S or follutein) or if this fails (2) surgical ablation of the excessive tissue. A reduction diet, especially low in fat and high in protein, should be continued. If the pregnancy urine material is effective, increase of pubic hair, slight enlargement of the small genitalia, and redistribution of fat would be expected. If so, several courses at intervals of a few months might be given. If it is found that this patient has gynecomastia, an interesting discussion of the subject will be found in the paper by Geschickter, Lewis and Hartman on "Tumors of the Breast Related to the Oestrin Hormone" (*Am. J. Cancer* **21**:828 [Aug.] 1934).

OCCUPATIONAL DISEASES ASSOCIATED WITH ARTIFICIAL FERTILIZER

To the Editor:—I have two patients working in a fertilizer factory. Both complain of bronchitis and some dysuria and frequency. Another worker in the factory told me that he had to quit this year on account of the same symptoms. These men have all worked off and on for years and have never been troubled this way before. The factory is using for the first time this year super phosphate (ammoniated). The other chemicals being used are magnesium sulphate, ammonium sulphate, sodium nitrate, calcium cyanamide, potassium chloride, ammonium phosphate, potassium nitrate, fish meal and whole meal. The super phosphate is a mixture of calcium phosphate and calcium sulfate. Can you tell me whether any of these things would cause dysuria? Also tell me the hazards of the fertilizer industry and means to prevent them, if any.

H. S. EVERETT, M.D., St. Stephen, N. B.

ANSWER.—"Chemical" fertilizer has long been regarded as a prolific source of occupational diseases. Among other agents that are associated with some branches of this industry, injury has been caused by ammonia, hydrogen arsenide ("arsine"), benzine, carbon dioxide, cyanamides, cyanogen compounds, hydrochloric acid, hydrofluoric acid, lead compounds, manganese compounds, nitrates and nitrites or their acids, certain phosphorus compounds, sulfates, sulfur dioxide, hydrogen sulfate, sulfuric acid, silica and silicates.

Ordinarily it is preferable to regard most of the occupational diseases arising in fertilizer manufacture as products of mixed intoxicants. Several of the substances mentioned are capable of inducing inflammation of the respiratory tract. A smaller number may be regarded as irritants of the urinary bladder. Calcium cyanamide, for example, is one of the substances that may produce disorders of the respiratory tract. If benzene or benzine is used for the defatting of organic materials, the vapors may give rise to bladder inflammation. Extensive exposure to various mineral acids may occasion a highly acid urine, with subsequent bladder irritation. Alcohol apparently plays a distinct part in intoxications from calcium cyanamide. When calcium cyanamide dust is inhaled, symptoms are said not to appear until some alcoholic beverage is taken, the amount being unimportant. The duration of the attack depends in some measure on the amount of alcohol imbibed. A few hours' exposure in a fertilizer plant associated with intake of alcohol may make a workman vulnerable to a cyanamide poisoning attack. Nondrinkers are not involved. So different are the chemicals used in varied fertilizer plants, and so numerous are the possible intoxicants, that it is not possible to furnish in this answer adequate information indicating protective measures. In the International Labor Office publication entitled "Occupation and Health," one section, devoted to fertilizers, contains some data on protective measures. In general, protection is to be found through installation and maintenance of ventilating and exhaust systems for protection against gases, vapors and dust; through the wearing of respirators in some cases for protection against dusts; by the use of protective garments for warding off bacterial invasion and skin diseases, and through strict avoidance of alcoholic beverages by workers in plants in which cyanamide is used.

COTTON DYES AND POLYNEURITIS

To the Editor:—I have a patient, a white woman, aged 34, about 5 feet 7 inches (170 cm.) tall, weighing 90 pounds (41 Kg.), whom I saw for the first time about five days ago. She states that she has always been slender but has lost from 35 to 40 pounds (about 17 Kg.) since Christmas. Beginning last Christmas there was a feeling of malaise without any particular outstanding symptoms, save loss of energy and general achings, which however were not severe enough to stop her from working. April 9 she became acutely ill, vomited for three days and nights, and noticed extreme weakness of all four extremities, which in a period of five or ten days became a total paralysis. She thinks that at the onset she had a very high fever. So far as I can determine there was no rigidity of the neck; vomiting was not projectile and was accompanied for about twenty-four hours by diarrhea and then constipation. At present there is occasional nausea, very little headache, no salivation, and extreme pain in all four extremities, particularly the legs. She has had no incontinence or retention of either urine or feces at any time. The patient's eyes are rather staring, she is emaciated, and the skin is rough over the entire body; there are decided trophic changes. The temperature is 98.8 F., the pulse rate 120, the blood pressure 114 systolic, 90 diastolic, and the urine normal. The eyegrounds are not remarkable; the pupils are dilated but react both to light and in accommodation. The throat and the mouth are not remarkable; there is no line on the gums. The heart is normal save for the fast rate. The chest is not remarkable, nor is the abdomen. The pelvis is normal. Both arms are capable of slow, wavy motion in all directions but accompanied by a bilateral wrist drop and complete flaccid paralysis of the hands, making it impossible for her to move her fingers or feed herself. The lower extremities show complete flaccid paralysis from the hips down. All the reflexes in all the extremities are absent. The Wassermann reaction is negative. The hemoglobin is 90 per cent. Blood smear shows no stippling or abnormality of any cell either red or white. Sensory paralysis is not complete; some areas distinguish a pin prick, and heat is felt in most areas. Careful questioning discloses no cases of anterior poliomyelitis anywhere in the surrounding community. There is no possibility of food poisoning. The patient lives on a farm about 15 miles from any town but I find that she has been working on bedspreads for a concern that furnishes the yarn to private individuals and allows them to do the work at home. She did this work at intervals for two or three months preceding the first feeling of malaise, and since Christmas, or about three months before the acute onset, had been working constantly at this occupation. I find that these women are in the habit of moistening this dyed yarn with their mouths. Since seeing this case I recall another patient doing the same type of work who complained of mild pains in all extremities, particularly the wrists, and who had no demonstrable focus of infection to account for her symptoms. Please furnish me with information as to whether the dye could be responsible for this condition. Any comments or suggestions as to treatment and prognosis would be greatly appreciated. Please omit name.

M.D., Alabama.

ANSWER.—Human inclination, as found in the lay mind and sometimes in the medical mind, is to attach undue significance to common circumstances in the living environment as causes of disease states. It is scarcely believable that the dyes found in cotton yarns might bring about the profound polyneuritis described in this query. Aniline dyes in their finished state are usually without harmful properties. There are a few exceptions. Diamine dyes, such as are still frequently used in coloring hair, are dangerous substances. A few persons are

prone to become sensitized to the action of various dyes, but such sensitivity usually manifests itself through dermatoses or asthmatic reaction rather than through such severe disturbances as described in this query. In the manufacture of dye substances many intermediate materials are exceedingly dangerous, but these harmful agents are nearly always removed or altered prior to the attainment of the finished product. The query indicates that these dyed yarns may be moistened in the mouth. So far as known, this practice is limited to the wetting of an occasional end of the thread or yarn in order to push through an eyelet. It is not understood that any general wetting of the yarn takes place through contact with the mouth. The stand is therefore taken that from the information now in hand it is not possible to accept any probability that the dyes as described caused the severe neurologic condition indicated. Schwartz (Dermatitis in the Synthetic Dye Industry, *Pub. Health Rep.* **49**:1176 [Oct. 5] 1934) says "By far the greater number of finished dyes are innocuous, but the following have been known to cause dermatitis." He then cites a list of twenty-five dyes, including bismarck brown, hydron blue, methyl violet, orange Y and victoria green. Later in the same paper he says "An excessive amount of papillomata and carcinoma of the bladder has been noted among workers in synthetic dyes." Various substances—aniline, benzidine, toluene, dinitrophenol, beta-naphthylamine—have been blamed as causative agents. In the present instance it is believed that a careful neurologic examination may establish an ultimate cause of this apart from the use of cotton yarns in consignment work at home.

POISONING FROM PAINT

To the Editor:—A man was applying paint with a brush to steel bars. After he had worked five days a dermatitis developed between the fingers of his hands and from the tops of his shoes, spreading over the entire body within about four weeks. The man had not previously worked with paint. The paint contained lead chromate 25 per cent, ferric oxide 23 per cent and silica 52 per cent and was in a vehicle consisting of processed linseed oil and tung oil 75 per cent, oil drier 10 per cent and mineral spirit 15 per cent. An analysis of the paint from the man's clothing showed no arsenic. The dermatitis exfoliated and was followed by vomiting and pain in the abdomen; he vomited red blood from the throat and stomach apparently; he had spasmodic fits of gagging and vomiting; there was alternate constipation and diarrhea, with much mucus and bile; the man was rational practically all the time; he had a peripheral neuritis two thirds the distance of the arms to the tips of the fingers and two thirds the distance of the legs to the tips of the toes. Early in his affliction he began to lose his grip and sensation of touch, and his wrists dropped. There was no lead line around the gums; there was some optic neuritis; a spinal puncture showed nothing abnormal, and the blood count and the urinalysis showed no lead or arsenic. The man contracted the dermatitis June 5 and died about Aug. 12, 1934. An autopsy was held but no tests were made of the liver, skin or other glands for lead or arsenic. Hair from the body was delivered to a chemist, who made the Reinsch test and the Gutzeit test on the hair and found that the hair contained 0.8 mg. of arsenic in 100 Gm. of hair. It was positive for arsenic, and the controls were negative. In the Reinsch test it was positive for arsenic, and microscopic examination of sublimate was indicative but not entirely conclusive. The chemist stated that the hair contained approximately ten times as much arsenic as is found in normal hair. I cannot say and nobody seems to know whether or not the hair was washed before it was tested. The attending physicians state that the clinical picture was that of arsenical poisoning, but in view of the fact that all the tests for lead and arsenic produced nothing positive as to either of these poisons they were not certain and could not make a diagnosis, but at the present time they are very much influenced by the finding of the arsenic in the hair. The paint contained lead and tung oil and it seems that nobody knows very much about the poison in tung oil. Have you any literature or any information that would help in a discussion of the matter and with the doctors who attended the man? In view of the fact that the man apparently did not handle arsenic, it would seem that he was poisoned from the lead or from the tung oil. Queries to the state department of health and the United States Public Health Service have received courteous answers but no real information.

M.D.

ANSWER.—Tung oil has been used in varnishes and paints for many years and has never been classified as an industrial hazard. No cases have been reported to our knowledge from its use in paint. It is obtained from the seeds of aleurites and has been applied to the skin in certain cases. Taken internally it may act as a cathartic and emetic. It is not volatile. Lead chromate can produce lead poisoning. The chromate radical is probably set free in the body and may cause systemic symptoms and dermatosis in very rare cases. The patient may sweat profusely and show marked tenderness of the muscles. The wrist drop may be due to the action of lead. In that case lead should have been found in the urine and stippled cells in the blood.

The necropsy should have revealed a damaged liver with areas of necrosis if the arsenical poisoning was severe enough to cause the symptoms reported. The presence of arsenic in the hair is of no diagnostic value. Part of the patient's trouble may have rested in his inexperience and he may have broken the skin between his fingers, allowing the ingredients of the paint to come in contact with the abrasions. This might possibly have caused him to become susceptible to some of the ingredients of the paint. It is improbable that he could have inhaled enough of the ingredients of the paint to cause his symptoms inside five days.

This case would require more information as to the necropsy and impurities in the paint as well as to the manner in which the patient worked to justify any conclusion as to the cause of death.

PREVENTION OF EXPLOSION IN USING ETHYLENE

To the Editor:—I have recently been asked as to the advisability of using portable shock proof radiographic and fluoroscopic equipment in the operating room when ethylene is being used as the anesthetic agent. The operating room in question is considered safe, in that the operating table and floor are all metal equipment and electrical connections are grounded, and there is adequate provision for grounding the x-ray equipment if it should be used. It is my own opinion that in spite of the shock proof nature of the equipment there is still danger in its use under these conditions, but I know of no recent authentic data and would appreciate your opinion.

M.D., Illinois.

ANSWER.—There need be no fear, provided the apparatus is properly designed. If the sparking parts or such parts as are likely to give trouble are protected properly (e. g., under oil) there is no danger. If provided, furthermore, with a mercury switch or a bellows foot switch, the utmost safety is assured when using either ethylene-oxygen, nitrous oxide-ether or ether through a vaporizing device. Professor Hodges of the Billings Hospital, University of Chicago, has recently devised such an "ensemble."

UNILATERAL EDEMA

To the Editor:—A girl, aged 13 months, admitted to a hospital because of swelling of the left side of the body, of one day's duration, developed mumps about one week before. Concomitant with this she had a severe cough, slightly productive in character. The night previous to admission, her mother noticed that her left eye, the left side of her neck, the left arm and the left leg appeared swollen. The mother stated that the child had a slight fever and was restless during the night. The past history revealed no previous illnesses and was essentially negative. Physical examination on admission showed edema of the left eyelid, left nasopharynx, left arm and leg and consolidation in the left lung. Roentgen examination the day of admission revealed lobar pneumonia of the left lung accompanied by some fluid, which was probably both free and encapsulated in the left pleural cavity. The trachea was not displaced, and no abnormality of the spine was seen. Blood count showed leukocytosis to the extent of 17,000 white blood cells, 83 per cent polymorphonuclears, 10 per cent large mononuclears and 7 per cent small mononuclears. The temperature on admission was 102 F. While the child was in the hospital the temperature, pulse and respiration rose progressively daily, and the child kept her head retracted and seemed more comfortable in that position. Two days after admission a rib resection was done. Frank pus was found. Third day after admission the child died. The temperature chart showed progressive rise from 102 on admission to 106 at death. Autopsy was negative except for the following: The thorax showed considerable edema and enlargement of the anterior and middle mediastinum. This edema and swelling extended upward along the arch of the aorta, especially on the left side, and involved the thymus, which was pale in appearance but not particularly enlarged. The left thoracic cavity was plastered on its whole wall by a thick, purulent exudate, which also covered the diaphragm. There were no adhesions found nor free fluid or pus in the thoracic cavity. The left lung showed a wedge shaped infarct in the upper lobe and a pneumonia in the lower lobe. I would appreciate it if you would state your theories as to the cause of this edema and why it should be localized to the left side of the body. Our diagnosis was pneumonia accompanying mediastinitis and empyema. Please omit name.

M.D., Connecticut.

ANSWER.—In considering the answer to the questions raised, the first reaction is one of regretful wonder why the extent and nature of the edema and the appearance of the edematous parts, before as well as after death, are not described more fully; also, why the extent and the objective results of the necropsy are not recorded in detail. While it is not possible to explain a truly unilateral edema on the basis of the information at hand, the clinical history and the report of the necropsy, incomplete as they are, contain indications that it may have been a case of secondary infection, possible in mumps. The edema and the pulmonary infection appear to have developed during or shortly after an attack of mumps. The infarct in the upper left lobe points directly to embolism. Perhaps the pneumonia in the left lower lobe was embolic in origin and gave rise to suppurative pleuritis, from which in turn developed acute mediastinitis. But where was the primary

focus? The edema of the left eyelid and of the left nasopharynx suggest the possibility of a thrombophlebitic process on the left side of the neck, which might have had its starting point in a parotitis. The subsequent retraction of the head might have been due to meningeal involvement. The exact situation cannot be known, however, because the necropsy is silent on the structures of the neck, on the brain and its membranes, and on the veins of the extremities.

LOSS OF WEIGHT DURING NIGHT

To the Editor:—A man, aged 61, loses 3 pounds (1,360 Gm.) each night. He weighs, stripped, just before going to bed. He weighs again on arising in the morning before he has urinated or bathed. I have been treating him clinically for osteo-athritis and hypothyroidism. He takes 2 grains (0.13 Gm.) of thyroid each morning at breakfast but has taken no other drugs, as his arthritis is of a mild type. I am at a loss to explain his loss of weight during the night. He does urinate once during the night, but I am sure that the weight of the urine would not be 3 pounds and, being hypothyroid he hardly ever perspires. Please omit name and address. M.D., Georgia.

ANSWER.—Loss of weight during the night is a normal phenomenon and, in this patient, consists of two factors: (1) insensible loss of weight and (2) urination.

Insensible loss of weight has been thoroughly studied in the last few years by Newburgh and his associates, and others. It can be roughly regarded as the amount of water evaporated from the skin and lungs (not including frank perspiration) plus the amount of carbon dioxide exhaled minus the amount of oxygen retained. This loss of weight, in the absence of muscular work, is proportional to the total energy expenditure of the individual. In normal adults it varies from 1,000 to 1,500 Gm. daily. The administration of thyroid to this patient may be causing a metabolism higher than normal and therefore a greater insensible weight loss. But even at the normal level of metabolism the loss of weight during the night due to this factor might be about 600 Gm., or 1⅓ pounds.

The normal adult excretes as much as 600 cc. of urine during the night hours. This patient, being 61 years old and having perhaps some impairment of kidney function, excretes at least 600 cc., probably more. This means a loss of another 1⅓ pounds in weight.

The total estimated weight loss due to these two factors, 2⅔ pounds (1,210 Gm.), is sufficiently close to the weight loss observed to obviate the assumption of any abnormality.

VENOPLASTIC DISORDERS AND RAYNAUD'S DISEASE

To the Editor:—I have under my charge a young man, a college athlete, who does a great deal of rowing but who complains that when his hands get wet or cold they become blanched from the midphalangeal joints to the finger tips. There is a tendency in other members of the family for the hands and fingers to become slightly cyanosed when subjected to cold. This young man appears in perfect health and shows no abnormal changes in the chest cavity and no cervical rib or other obstruction to circulation. I should like to be advised as to the proper method of handling this case. Please withhold my name. M.D., Massachusetts.

ANSWER.—Blanching of the digits from cold represents a vasospastic disorder. This may be primary as observed in Raynaud's disease, or secondary as a result of organic disease of the digital arteries, neuritis, scleroderma and other organic conditions. Raynaud's disease is rare among the male sex, the incidence being about 9:1 in favor of the female sex. Many vasospastic disorders that affect males subsequently have proved to be thrombo-angiitis obliterans (Buerger's disease). The pulsations in the ulnar and radial arteries should be observed from time to time. If the condition is thrombo-angiitis obliterans, one or both of these vessels are likely to be occluded. An arteriogram frequently is necessary to determine occlusion of the arteries distal to those palpable at the wrist. Scleroderma should be suspected, and the condition of the skin should be noted for edema, slight stiffness or loss of elasticity in the skin. Treatment of a vasospastic disorder depends on the primary cause. If it is Raynaud's disease, and if it has progressed to the point at which it has produced some disability, a cervicothoracic ganglionectomy is advisable. If thrombo-angiitis obliterans is eventually diagnosed, prophylactic care of the fingers, protection from cold and trauma, and measures to increase circulation may prevent trophic disturbances. If these supervene, more active forms of treatment to increase the circulation are indicated. Cervicothoracic ganglionectomy is beneficial in cases of thrombo-angiitis obliterans in which the disease has progressed so far that there are ulcers or gangrene. In some cases thrombo-angiitis obliterans does not progress or cause disability and needs no special form of treatment. It is important not to create an anxiety neurosis, which frequently develops because of the rather alarming appearance of the digits when blanched.

AMERICAN COLLEGE OF PHYSICAL THERAPY

To the Editor:—Please tell me something about the American College of Physical Therapy. The enclosed announcement of short courses in physical therapy for physicians was received a few days ago. M.D., Indiana.

ANSWER.—The American College of Physical Therapy, 5 North Wabash Avenue, Chicago, is an organization owned by laymen, which has for its main function the training of technicians in massage, electrotherapy, colon therapy, physical therapy and so on. Its present postgraduate faculty is made up of physicians who are not members of the Chicago Medical Society or Fellows of the American Medical Association.

There is no evidence available that the faculty members possess any particular skill in these various fields. The courses mentioned are of less than one day's duration.

The Council on Physical Therapy prepared an article for THE JOURNAL, Sept. 23, 1933, page 999, which stated that "one may be justified in assuming that the background of such an institution as the American College of Physical Therapy is more commercial than educational. Certainly one would hesitate to regard it as a reliable place in which to receive instruction in physical therapy. Of course, the 'College' has not been approved by the Council on Medical Education and Hospitals of the American Medical Association."

SENSITIVITY TO IODIDES

To the Editor:—I have a patient who has a fungous infection of his throat and was advised to use iodides. This medication is the only form that has given him relief. However, he has of late been very sensitive to iodides (all common preparations). Can you suggest some preparation (iodide) he can try? Kindly omit name. M.D., New Jersey.

ANSWER.—The patient may possibly tolerate better an organic iodide such as calcium iodobehenate, also known as Calioben or Sajodin, an insoluble, almost tasteless substance, best prescribed in powder form, that may be given in doses of from 0.5 to 1 Gm. three times daily.

SYMMETRICAL FAT ON ANKLES AND LEGS

To the Editor:—A white woman, aged 20, 63½ inches (160 cm.) in height, weighing 128 pounds (58 Kg.), has consulted me concerning the reduction of diffuse areas of fat symmetrically located on the ankles and knees. Her general physical examination as well as roentgenograms of the lower extremities reveal no pathologic changes. Please outline a method for the reduction of this fat. M. D., New York.

ANSWER.—It would be necessary to examine the patient in order to satisfy oneself that the areas symmetrically located on the ankles and knees are truly areas of fat. If they are fat, the suggestion is that they are lipomas, in which case the only way that they can be removed effectively will be by operation. The fat in lipomas seems to be unusually stable, so that general reduction methods are ineffective so far as such a fat tumor is concerned.

POLLEN CONTENT OF AIR IN MICHIGAN

To the Editor:—In THE JOURNAL, April 13, 1935, page 1359, appeared a tentative answer to a question from Dr. E. O. Giere of Minneapolis with regard to the pollen content of the air in Alpena, Mich. Aug. 3, 1935, page 387, THE JOURNAL published a comment by Dr. E. S. Parmenter of Alpena, Mich., who quoted Weather Bureau statistics on prevailing wind directions in Alpena and concluded that the amount of ragweed pollen in the air at Alpena "must be very small."

I am now able to furnish pollen figures for Alpena for the ragweed season of 1935. Slides were exposed as usual at the U. S. Weather Bureau station. The total number of ragweed pollen granules falling on the unit area of the slides (1.8 sq. cm.) during the fifty-two days from August 10 to September 30 was 1,124. This is considerably more than the average total found during the past two ragweed seasons at Petoskey, St. Ignace or Sault Ste. Marie. The daily fluctuation of atmospheric contamination at Alpena followed very closely the fluctuations at Petoskey and St. Ignace, showing that the weather conditions causing atmospheric contamination in the northern end of the Michigan peninsula were general rather than local. The day of highest pollen concentration was September 10. On this particular day the prevailing winds at Alpena were from the northwest, but from the study of general weather conditions on that day it seems quite evident that the pollen came from Wisconsin and was blown around or across the upper end of Lake Michigan.

In general, the days of heaviest concentration were those on which the wind was from a southerly direction. The ragweed hay fever season of 1935 in northern Michigan consisted of seven distinct waves of pollen blown from downstate or from the west shore of Lake Michigan.

O. C. DURHAM, North Chicago, Ill.

Medical Examinations and Licensure

COMING EXAMINATIONS

ALASKA: Juneau, March 3. Sec., Dr. W. W. Council, Juneau.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, March 14. *Oral examination for Group A and B applicants* will be held in Kansas City, Mo., May 11-12. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, March 28. *Applications must be filed not later than February 28.* Oral, clinical and pathological examination of all candidates will be held in Kansas City, Mo., May 11-12. *Applications must be received not later than April 1.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Kansas City, Mo., May 11 and New York, Oct. *All applications and case reports must be filed sixty days before date of examination.* Asst. Sec., Dr. Thomas D. Allen, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Kansas City, Mo., May 9. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Kansas City, Mo., May 9. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY: Kansas City, Mo., May 8-10. Sec., Dr. B. R. Kirklin, Mayo Clinic, Rochester, Minn.

CONNECTICUT: *Basic Science.* New Haven, Feb. 8. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven.

ILLINOIS: Chicago, Jan. 28-30. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA: Des Moines, Feb. 25-27. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: Minneapolis, Jan. 21-23. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS. *Parts I and II.* Feb. 12-14, May 6-8, June 22-24, and Sept. 14-16. Ex Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEVADA: *Reciprocity.* Carson City, Feb. 3. Sec., Dr. Edward E. Hamer, Carson City.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 27-30. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

PUERTO RICO: San Juan, March 3. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

SOUTH DAKOTA: Pierre, Jan. 21-22. Dir., Division of Medical Licensure, Dr. Park B. Jenkins, Pierre.

VERMONT: Burlington, Feb. 12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

WYOMING: Cheyenne, Feb. 10-11. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

Colorado October Report

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held in Denver, Oct. 2-4, 1935. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. Twelve physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Osteopath*			85.1

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Medical College of Alabama		(1900)	Alabama
College of Medical Evangelists		(1933)	California
University of Colorado School of Medicine		(1934)	N. B. M. Ex.
Northwestern University Medical School		(1910)	Illinois
University of Illinois College of Medicine		(1930)	Illinois
University of Kansas School of Medicine		(1926)	Kansas
Barnes Medical College		(1906)	Kansas
Washington University School of Medicine		(1924)	Missouri
Creighton University School of Medicine		(1928)	Nebraska
University of Nebraska College of Medicine		(1928)	Nebraska
Hahnemann Med. College and Hosp. of Philadelphia		(1931)	Kentucky
Marquette University School of Medicine		(1927)	Wisconsin

* Licensed to practice medicine and surgery.

West Virginia October Report

Dr. Arthur E. McClue, State Health Commissioner, reports the oral and written examination held in Huntington, Oct. 28-30, 1935. The examination covered eleven subjects and included 110 questions. An average of 80 per cent was required to pass. Eight candidates were examined, all of whom passed. Twelve physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Rush Medical College		(1931)	86.3
Indiana University School of Medicine		(1932)	84.9
University of Kansas School of Medicine		(1934)	83.4
Tufts College Medical School		(1932)	88.5
University of Cincinnati College of Medicine		(1935)	86
University of Pennsylvania School of Medicine		(1933)	84.8
Medical College of Virginia		(1934)	86.3
University of Virginia Department of Medicine		(1934)	86.1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1931)	Dist. Colum.
Rush Medical College		(1934)	Illinois
Johns Hopkins University School of Medicine		(1924)	Idaho, Maryland
St. Louis University School of Medicine		(1933)	Missouri
University of Cincinnati College of Medicine		(1933)	Ohio
Jefferson Medical College of Philadelphia		(1922)	Ohio, (1929) S. Carolina
University of Pennsylvania School of Medicine		(1931)	Penna.
Medical College of Virginia		(1932),	(1933) Virginia
University of Virginia Department of Medicine		(1934)	Virginia

Indiana June Examination

Dr. William R. Davidson, secretary, Indiana State Board of Medical Registration and Examination, reports the written examination held in Indianapolis, June 25-27, 1935. The examination covered 15 subjects and included 100 questions. One hundred and fifteen physicians were examined, 111 of whom passed and 4 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine		(1935)	81.5,* 81.5
Northwestern University Medical School		(1935)	80.7, 81.3,* 85.3*
Rush Medical College		(1935)	87.7*
Indiana University School of Medicine		(1934)	83.7,
(1935) 78.8, 78.9, 78.9, 79, 79.1, 79.3,† 79.8, 79.8, 79.9, 80, 80.2, 80.2, 80.3, 80.3, 80.4, 80.5, 80.5, 80.5, 80.7, 80.7, 80.9,† 80.9, 80.9, 81.1, 81.1, 81.2, 81.3, 81.3, 81.3, 81.5, 81.5, 81.6, 81.7, 82, 82, 82.1, 82.1, 82.1, 82.1, 82.2, 82.3, 82.3, 82.3, 82.3, 82.3, 82.4, 82.5,† 82.5, 82.5, 82.6,† 82.6, 82.6, 82.6, 82.7, 82.7, 82.8, 82.9, 82.9, 83, 83, 83.1, 83.1, 83.2, 83.3, 83.3, 83.3, 83.3, 83.3, 83.4, 83.4, 83.4, 83.5, 83.6, 83.6, 83.6, 83.6, 84, 84.1, 84.2, 84.2, 84.3, 84.4, 84.4, 84.5, 84.7, 84.7, 85, 85.1, 85.1, 85.2, 85.3,† 85.9, 86.8			
State University of Iowa College of Medicine		(1934)	83.3
University of Louisville School of Medicine		(1935)	78.9
University of Minnesota Medical School		(1932)	83.8
Creighton University School of Medicine		(1935)	79.7
New York Homeopathic Medical College and Flower Hospital		(1935)	79.6
Eclectic Medical College, Cincinnati		(1935)	83.9
Jefferson Medical College of Philadelphia		(1935)	81.8, 85.2
University of Pennsylvania School of Medicine		(1935)	83.4
Licentiate of the Royal College of Physicians and of the Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Physicians and Surgeons, Glasgow		(1934)	83.7

School	FAILED	Year Grad.
Loyola University School of Medicine		(1935)‡
Indiana University School of Medicine		(1935)
University of Manitoba Faculty of Medicine		(1929)
Universitatea Regele Ferdinand I-iu din Cluj Facultatea de Medicină şi Farmacie		(1933)§

* This applicant has completed the medical course and will receive his M.D. degree on completion of internship. License has not been issued.

† This applicant will receive the M.D. degree in June 1936. License has not been issued.

‡ This applicant has completed the medical course and will receive his M.D. degree on completion of internship.

§ Verification of graduation in process.

Arizona October Report

Dr. J. H. Patterson, secretary, Arizona Board of Medical Examiners, reports the written examination held at Phoenix, Oct. 1-2, 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Five candidates were examined, 4 of whom passed and 1 failed. Four physicians were licensed by reciprocity and 2 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1934)	76.1, 79.2
School of Med. of the Division of the Biological Sciences		(1935)	78.6
University of Oregon Medical School		(1934)	80

School	FAILED	Year Grad.	Per Cent
University of Southern California School of Medicine		(1935)	71.9

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Tulane University of Louisiana School of Medicine		(1921)	Tennessee
Univ. of Michigan Medical School (1929) New York,		(1932)	Penna.
Baylor University College of Medicine		(1931)	Texas

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1935, 2)	N. B. M. Ex.

Book Notices

A Text-Book of Fractures and Dislocations Covering Their Pathology, Diagnosis and Treatment. By Kellogg Speed, S.B., M.D., F.A.C.S., Professor of Clinical Surgery, Rush Medical College of the University of Chicago. Third edition. Cloth. Price, $11. Pp. 1,000, with 1,042 illustrations. Philadelphia: Lea & Febiger, 1935.

This standard textbook on fractures and dislocations for the general practitioner was written by a man of large experience at Cook County Hospital and a member of the fracture committees of the American College of Surgeons and the American Medical Association. Fractures incidental to industry and domestic life have gradually diminished in proportion to the present preponderating ratio of these injuries sustained from automobile accidents. In the United States the number of individuals injured per annum by the automobile has been about 1,000,000, while the deaths from such causes have been more than 30,000. The standard of care has been raised by efforts of the various medical organizations and the necessity of obtaining results satisfactory to the patient. Hospitals likewise have been forced to raise their standards of care. Even in remote districts there is a rapidly spreading knowledge of the modern treatment of fractures supplemented by mechanical apparatus to carry it out. Progress has been stimulated by the influx of young men recently taught the subject in medical schools. When all patients are given proper first aid and reach the doctor or hospital already splinted, gross deformities and most of the pain have already disappeared. The exact type of fracture should be determined from the history and the examination. Local complications must not be overlooked. If further transportation to another place or hospital is necessary, the immediate dressing should be one that fixes the limb in the best position obtainable after gentle efforts at reduction or straightening it.

In every traumatic injury in which fracture or dislocation is suspected, roentgen examination should be used. From the medicolegal standpoint a roentgenogram carries great weight. The influence on treatment is also far reaching. One should know the relative position of the fragments in every fracture both before and after attempts at reduction. This knowledge may lead to repeated attempts to better the displacement and bring about a more favorable final result.

Coxa valga may occur after fracture of the neck of the femur. In coxa valga the limb is abducted with external rotation and limitation of adduction, the hip joint is painful, and the gait is rolling and unsteady with a limp, the trunk being inclined toward the affected side. The striking symptom is a lengthening of the limb of from 2 to 3 cm. Treatment advised by the author consists in fixing the limb in plaster in adduction or performing cuneiform osteotomy at the neck to straighten it. Many surgeons strive to obtain coxa valga.

The volume does not contain any discussion of callus formations and bony union or a description of Shenton's line, Skinner's line or Leadbetter's method of treating fracture of the neck of the femur. No reference to phosphatase appears in the index. The statement is made that "Sayre's adhesive tape dressing for fracture of the clavicle is satisfactory routine treatment of fracture of the clavicle in adults," though many modern surgeons refuse to employ this method.

Chronic Nasal Sinusitis and Its Relation to Mental Disorder: An Applied Pathology of Abnormal Conditions of the Nasal Sinuses Found in Mental Hospital Patients. By F. A. Pickworth, B.Sc., M.B., B.S., Director, Joint Board of Research for Mental Disease, City and University of Birmingham. Cloth. Price, 16s. Pp. 156, with 83 illustrations. London: H. K. Lewis & Co., Ltd., 1935.

The author concerns himself in this work with a detailed discussion of a topic often underappreciated by rhinologists; namely, the relationship between chronic suppuration in the accessory nasal sinuses to mental disorders. He makes clear with a wealth of data obtained from clinical examination and postmortem evidence how frequently, in the insane, disease conditions may be found in these chambers so closely placed to the contents of the cranial cavity. There is sober consideration of the types of sinusitis found in these cases and manner in which the brain and its function may be disturbed. It is a fair conclusion that many times unsuspected sinus disease may be the overlooked cause of the patient's disabilities and there is in the author's work and in the observation of others enough reliable evidence to confirm his thesis. Rhinologists and psychiatrists both would do well to acquaint themselves with this careful study; an awareness of the implications involved would undoubtedly aid more than one suffering, for instance, from loss of memory, melancholia and even suicidal tendencies.

The Diagnosis and Treatment of Variations in Blood Pressure and Nephritis. By Herman O. Mosenthal, M.D., Professor of Medicine and Attending Physician, New York Post-Graduate Medical School and Hospital, New York, N. Y. [Reprinting of Oxford Monograph, Vol. VII, The Diagnosis, etc.] Cloth. Price, $9. Pp. 616, with 7 illustrations. New York: Oxford University Press, 1931.

This is not a new book or even a new edition. It is a new binding of the printed sheets of the seventh volume of the series of loose-leaf monographs on diagnosis and treatment, which appeared in 1930 under the editorship of Dr. Henry A. Christian. The pages are identical with those of a copy of the original volume from the set of ten volumes; the hole for the loose-leaf binder is apparent despite the new and more conventional binding. There is much that is highly commendable in this brief and most readable monograph. It is not as large as suggested by the number of pages, for the type is unusually large and the spacing most liberal. The discussion of the diagnosis and treatment of nephritis is scientifically far better than the discussion of hypertension. In delineating the normal mechanism of renal secretion, Mosenthal follows closely the concepts of Richards and almost wholly ignores tubular secretion. The discussion of the methods of studying the renal function in Bright's disease reveals Mosenthal's clarity of thought and rational attitude but suffers from the fact that in the five years since the publication of the book many significant data have come to light. In some 400 references to the literature, which were carefully inspected, there were but three or four as recent as 1931; the literature of the nineteen twenties is adequately reviewed. The chapters on hypertensive disease are even more obviously out of date. It is suggested that arteriolar constriction is a compensatory mechanism to protect the capillaries from excessive active hyperemia and that hypertension is due to increased resistance in the larger vessels proximal to the arterioles. Such a concept is grossly at variance with the present ideas of circulatory dynamics. Prognosis received less than three pages of consideration. In view of the title of the work, the discussion of treatment is inadequate: a short sketch and enumeration of the various methods of therapeutic attack, but almost no critical discussion. The section on diet is admirable and emphatically stresses the necessity for a sane, well balanced dietary. In summation it may be said that Mosenthal's views are well worth studying by those with special interest in these related problems, but the book fails to fulfil the promise of its title. Medical progress has become so rapid that a book five years old is already somewhat behind the times.

Roots of Crime: Psychoanalytic Studies. By Franz Alexander, M.D., Institute for Psychoanalysis, Chicago, and William Healy, M.D., Judge Baker Guidance Center, Boston. Cloth. Price, $3. Pp. 305. New York & London: Alfred A. Knopf, 1935.

This volume is based largely on actual psychoanalyses of offenders carried out by the first named author in the Judge Baker Guidance Center, with which Dr. Healy is associated. The various chapters deal, therefore, with the records of cases giving first the history of the patient, then the results of the psychoanalysis and the investigations of the patient's dreams. The chapters are variously characterized by figurative terms such as "The Victim of Loyalty," "The Undetected Shoplifter," "A Favorite of Women" and "Nobody's Son." In four instances the investigators failed to win cooperation for psychoanalytic study or therapy—three of these were adolescents and the fourth a pronounced schizoid personality. The authors are convinced that investigation of the individual by the psychoanalytic technic brings out much that was not known and could not be known even through good case studies. These factors are dynamic in producing the antisocial trends. They see in the psychoanalytic research method a most useful technic for solving the cases of crime and aiding in its prevention.

The Radiology of Bones and Joints. By James F. Brailsford, M.D., M.R.C.S., Radiological Demonstrator in Living Anatomy, The University of Birmingham. Second edition. Cloth. Price, $9. Pp. 571, with 340 illustrations. Baltimore: William Wood & Company, 1935.

The first edition of this book was reviewed favorably in these columns about one year ago. Some of the original illustrations have been replaced by roentgenograms of better specimens, and over thirty additional roentgenograms have been included. The chapters dealing with osteochondritis, bone dystrophies and spondylolisthesis have been rewritten. A chapter has been added on dental radiography. The index has been changed so as to enable the reader the more readily to refer to information on specific roentgenographic appearances as well as on classified diseases. Unless he is content to adopt the position of a qualified technician, the details and technic of radiography not only demand a specialist in execution and interpretation but also compel the radiologist to take an active clinical part in scientific medical research, differential diagnosis, treatment and prognosis. The advent of radiography has considerably extended knowledge of the growth, development and structure of the bones and joints in health and in disease. Today the science with its advanced technic graphically provides delicate details of osseous changes that may clinch a diagnosis when clinical signs and symptoms are indefinite. The fascinating study of living bone disorders by the aid of radiography is ever revealing additional features which assist in the diagnosis and treatment of local and systemic disease processes.

Traitement de l'éclampsie: Technique actuelle du traitement prophylactique. Par B. Stroganoff. Préface de H. Vignes. Paper. Price, 18 francs. Pp. 111. Paris: Masson & Cie, 1935.

In this little book Stroganoff gives the history of his prophylactic method in eclampsia, the pathogenesis of the disease with the rationale of his treatment, and the results obtained by prophylaxis not only by himself but by obstetricians in various parts of the world. Among 7,344 cases of eclampsia treated by the Stroganoff method and reported by sixty-one different authors, the maternal death rate was 9.7 per cent. In a series of 1,113 Russian cases treated or supervised by Stroganoff, the maternal mortality was only 3.7 per cent and the fetal death rate was 20 per cent. The author points out that his conservative method yields far better results than any form of active therapy of eclampsia. In a group of 1,863 cases of eclampsia Stroganoff approved of cesarean section only twice when eclampsia was the sole indication for the operation. At the end of the blook is an outline of the method, the essentials of which are the administration of morphine and chloral under chloroform anesthesia, venesection, delivery by forceps or version and extraction as soon as this may be accomplished without harm to mother or baby, rupture of the membranes if there are no contraindications and the patient is in labor, and stimulation of such vital organs as the kidneys, skin, lungs and heart. The book is well written and is naturally a classic on the prophylaxis of eclampsia, which is at present practiced in one form or another in many parts of the world.

Child Nutrition on a Low-Priced Diet with Special Reference to the Supplementary Value of an Egg a Day, the Effect of Adding Orange Juice and of Replacing Egg by Liver. By Mary Swartz Rose, Professor of Nutrition, Teachers College, Columbia University, and Gertrude M. Borgeson. Child Development Monographs, Number 17. Paper. Pp. 109, with 24 illustrations. New York: Bureau of Publications, Teachers College, Columbia University, 1935.

Gains and losses in weight in children are often small and there is need for refined standards for judging their growth. Then, too, the growth of all children is affected to a great extent by the diet which they employ. The study presented in this volume was started in October 1923 in an effort to determine what foods had best be made the basis for an economical and yet satisfactory diet. Sixty children were chosen for the study. They were divided into two groups. One group received an egg a day, while the others did not receive this food. The diet was so adjusted that the egg did not increase the total calories in the diet over that of the control group. A constant record was kept of the physical condition of the children, the condition of their teeth, and their weight and growth throughout a period of observation lasting twenty-one months. The study indicates the efficiency of a very inexpensive diet for young children; but the diet must be chosen with a knowledge of the nutritive value of the foods given. Cereals furnished 30 per cent of the calories, fruits and vegetables 20 per cent, while milk furnished 36 per cent. The milk as a rule was not less than 25 per cent of the total calories. Fats and sugars furnished 13 per cent. Meats and eggs, the most expensive items, furnished only about 3 per cent. A study of this type does much to aid in the improvement of child nutrition.

The Schoolboy: A Study of His Nutrition, Physical Development and Health. By G. E. Friend, M.R.C.S., L.R.C.P., Medical Officer of Christ's Hospital, Horsham. With a foreword by J. C. Drummond, D.Sc., F.I.C., Professor of Biochemistry, University College, London. Cloth. Price, 7s. 6d. Pp. 128, with 31 illustrations. Cambridge: W. Heffer & Sons, Ltd., 1935.

Most studies on nutrition have been carried out on animals, because of the obvious difficulty in making nutritional experiments on human beings. The life span of an animal in comparison with that of the human is short, so that sometimes misleading results are obtained from such work. This book describes some observations made over a period of years, starting in 1913 and terminating in 1933. A record was kept of the food consumption and the types of food eaten during the war and postwar periods. During the war period, deficiencies, such as limitations of the milk supply, butter and meat, occurred. During this time the boys were on a diet that was practically devoid of vitamin D, except for a few individuals who were treated with some form of cod liver oil. And the effects of this deficiency were noticeable in the clinical disturbances that developed. The chief usefulness of this dietetic survey is in its confirmation of many of the facts concerning nutrition which have been presented as the result of animal experimentation. It is hoped that through it improvement in the nutrition of school boys will occur. Those who have the welfare of young persons at heart will find in this little volume a wealth of information.

The Diseases of Children: A Work for the Practicing Physician. Edited by Dr. M. Pfaundler, Professor of Children's Diseases at the University of Munich, and Dr. A. Schlossmann, Professor of Children's Diseases at the Medical Academy in Düsseldorf. Written by 61 Eminent Pediatric Authorities. English translation by the American Editor-in-Chief, M. G. Peterman, Sc.B., A.M., M.D., Professor, Department of Pediatrics, Marquette University Medical School, with the cooperation of 21 American Pediatrists. [Translated from the fourth German edition.] In five volumes. Cloth. Price, $45 per set. Pp. 544; 512; 689; 575; 546; with 1,129 illustrations. Philadelphia and London: J. B. Lippincott Company, 1935.

The publishers have made available in five handsome volumes an English translation, well edited, of the famous Pfaundler and Schlossmann system of the diseases of children. Many famous foreign physicians collaborated in producing this monumental work, and now twenty-two well known American physicians have collaborated in preparing a translation of the fourth German edition. They have added comments reflecting American developments in points of view wherever these seemed indicated. The books are handsomely printed on fine enameled stock. The five volumes cover the entire field of pediatrics, beginning with its history and then discussing hygiene, biometry, infant welfare, and pathology. Then come sections on premature infants and additional volumes covering the constitution, deficiency diseases, the diseases of the blood, the infectious diseases, and those diseases related to various special systems of the body. The illustrations are of the finest quality of halftone and colored reproductions. Thus this work becomes one of the most complete and satisfactory systems of pediatrics now available.

Clinical Bio-Chemistry. By Ivan Maxwell, M.D., B.S., M.Sc., Lecturer in Physiology and Clinical Bio-Chemistry, University of Melbourne. Third edition. Cloth. Pp. 297, with 6 illustrations. Melbourne: W. Ramsay, (Surgical) Pty. Ltd., 1935.

This is a comprehensive and well organized compilation of various laboratory tests with their clinical applications. It is a valuable aid to the clinician and also to the student and teacher of biochemistry. The treatments of renal efficiency, hepatic efficiency and gastric function are exceptionally thorough. The chapters on acidosis and pancreatic efficiency are not so critical and modern as one might expect. Poor methods for urinary and blood dextrose and for serum calcium, and old and cumbersome methods for blood urea and nonprotein nitro-

gen are recommended. The uric acid methods are not presented critically. The presentation on enzyme methods and reversible reactions could have been more critical. The book contains references to excellent fundamental monographs, papers and reviews. It is well indexed.

The Obstetric Pelvis. By Herbert Thoms, M.D., F.A.C.S., Associate Professor of Obstetrics and Gynecology, the School of Medicine, Yale University. Cloth. Price, $2.50. Pp. 115, with 50 illustrations. Baltimore: Williams & Wilkins Company, 1935.

This book was presumably written to prove the author's contention that roentgen pelvimetry should form part of the antepartum examination of every primiparous woman. He emphasizes the inadequacy and often incorrectness of external pelvic mensuration as an index of the size and shape of the pelvic inlet when done with the ordinary pelvimeter. On the other hand, the inlet of the pelvis can be accurately measured by means of roentgenograms. Whereas the author has little faith in the external measurement of the pelvic inlet, he points out the great importance of properly measuring the outlet of the pelvis with an outlet pelvimeter. His own instrument for this purpose has proved highly satisfactory. One chapter is devoted to the author's own technic of pelvic roentgenometry. The procedure is simple, rapid, accurate and adequate for all obstetric purposes. At the end of the book is an extensive bibliography, from which one learns that the author has written twenty articles during the past twenty years on the subject of the obstetric pelvis. The book contains much useful information and should prove helpful not only to specialists in obstetrics but also to general practitioners.

Incompatibility in Prescriptions and How to Avoid It, with a Dictionary of Incompatibilities. By Thomas Stephenson, D.Sc., Ph.C., F.R.S.E. Fourth edition. Cloth. Price, 6s. Pp. 62. Edinburgh: The Prescriber Offices, 1935.

In discussing a recently issued French book on incompatibilities, a reviewer expressed the opinion that a new English book on incompatibilities was just about due. That this was prophetic is evidenced by the appearance of this volume, which should be in the library of every prescriber; for, even if one has the older books on the subject there are many of the newer and now extensively used drugs that require an up-to-date guide. If one is to find fault—and a critic is, of course, supposed to do that—one might express the wish that the "Dictionary of Incompatibilities" were more complete than it is. Whether a really complete dictionary on incompatibilities is possible is another question.

Biological Politics: An Aid to Clear Thinking. By F. William Inman, M.B., Ch.B. Cloth. Price, $3. Pp. 258. Baltimore: William Wood & Company, 1935.

There are eleven chapters on different topics; e. g., sentiment and reality, the mechanism of inheritance, disease and inheritance, the ascent of man, European races, education. Most of the chapters were prepared originally as lectures and the book is dedicated to "the Wallasey Medical Society to whom part of the original paper was read as a presidential address." The general purpose running through the book is to discuss important biologic considerations—man as an animal—in relation to certain modern political theories and practices. The author announces himself as favoring the view "that by copying and allowing nature to have her head the greatest happiness of the greatest number can be ultimately secured." No attempt will be made to assess the merits and shortcomings of the discussions in the book; they are, however, readable and informative.

Infections of the Urinary Tract. By T. E. Hammond, F.R.C.S., Surgeon, The Royal Infirmary, Cardiff. Cloth. Price, 10/6. Pp. 250, with 6 illustrations. London: H. K. Lewis & Co., Ltd., 1935.

This book consists of a series of talks to practitioners by the bedside of the patient on the subject of infections of the urinary tract. The author has made an attempt to help them in the problems with which they are confronted. For this reason the book is of some value to the general practitioner. In the discussion the author stresses the practical side of each question, giving considerable space to diagnosis and treatment. The book is divided into nineteen chapters, with two appendixes. Because the author has put in writing his remarks at the bedside, this little volume has not the orderly arrangement and the completeness of a textbook.

Awaken Your Sleeping Beauty. By Lilyan Malmstead. Cloth. Price, $1.75. Pp. 96, with illustrations. New York: E. P. Dutton & Co., Inc., 1935.

The desire to achieve balance, poise, perfection and individuality is a natural urge in the consciousness of all women. "Lengthen the line between the chin and the waist" says Lilyan Malmstead, "and you will lengthen your years." The authoress uses the word "erectitude" to mean not only upright standing but a dynamic posture "which arouses the slumbering beauty and suffuses it through the entire body and face, thus bringing health, confidence and longevity." The writer believes that deliberate forward bending exercises are drastically incorrect and inconsistent, and in order that one may retain poise and proper proportions, one must take the opposite attitudes; namely, backward bending—"nature's corrective." The statement is made that "your toes should touch the floor first and be sure your step is neither too short nor too long, as either will throw the body out of balance and give your walk an awkward appearance." The writer advises against clumsy shoes. A shoe with a short vamp fits higher up into the arch, she states, at the same time giving the foot a graceful appearance. All together, the book is unworthy of serious critical consideration.

Streamline for Health. By Philip B. Hawk, Founder of Food Research Laboratories, Inc. Cloth. Price, $2.50. Pp. 186, with illustrations by David Oser. New York & London: Harper & Brothers, 1935.

To the multiplicity of books heretofore available in this field Dr. Hawk now adds a contribution that is largely personal. It is written in a light vein, illustrated with cartoons and quotations. The author draws heavily on the pages of THE JOURNAL for his scientific data concerning reducing nostrums. An appendix gives the usual tables of diets with caloric contents and food values. The book is in general quite sound in the material presented but contains apparently nothing that will produce in those who ought to eat less the necessary will power to do so. This would seem to be the really essential factor involved in any reducing campaign.

Handbook of Therapy. Edited by Morris Fishbein, M.D., Editor, Journal American Medical Association, Chicago. From the Handbook of Therapy. By Oliver T. Osborne and Morris Fishbein. Tenth edition. Imitation leather. Price, $2. Pp. 765. Chicago: American Medical Association, 1935.

The alert physician is constantly seeking therapeutic methods that are sound and are atuned to medical progress. For this reason "The Handbook of Therapy" is revised at frequent intervals. The latest revision includes a compilation of the material describing the newer therapeutic methods. Revisions of style and presentation of this material have also been made, so that the various subjects can be easily found. Much subject matter has been added; therapeutic suggestions that are obsolete have been deleted. The therapy of syphilis is not described, but other disorders requiring medical treatment have been included. Material concerning agranulocytic angina and prophylaxis has been added, and the treatment of measles and scarlet fever with convalescent serum is also described. With each revision, the usefulness of this well tried and tested handbook seems to be improved.

Essentials of Physiological Chemistry. By Arthur K. Anderson, Ph.D., Professor of Physiological Chemistry, The Pennsylvania State College. Cloth. Price, $2.75. Pp. 257, with 31 illustrations. New York: John Wiley & Sons, Inc., 1935.

As technical sciences related to medicine have developed there has become apparent the need for special textbooks not so complicated and extensive as those used by the medical student. Among the fields in which such textbooks have been needed especially is physiologic chemistry—a field studied by nurses, laboratory technicians, anesthetists, x-ray technicians, and similar workers in medical fields. The volume prepared by Dr. A. K. Anderson has been designed especially for students of this type. It has promptly found a place in teaching and is now generally recommended by teachers in many universities. There are nineteen chapters, discussing the nature of food substances, the processes of digestion, the character of metabolism, and examinations of the blood, the urine, the endocrine organs and the vitamins. The illustrations are simple and well designed. The volume can be generally recommended as a most useful textbook in this field.

Medicolegal

Dental Practice Acts: Practice of Dentistry by Dental College.—The Atlanta Southern Dental College was indicted for illegally practicing dentistry in Georgia. The college demurred to the indictment as a whole and to each count in the indictment. The trial court decided adversely to the college on certain of the demurrers and the case was brought before the court of appeals of Georgia, division 1.

The dental practice act of Georgia provides, in part, that:

> All persons who shall charge a fee . . . for operations or parts of operations of any kind in the treatment of diseases or lesions of the human teeth, mouth, gums or jaws, or extract teeth or attempt to correct the malposition thereof, or who shall fill or crown a human tooth or teeth, or do any operation whatsoever on the human tooth, or teeth, gums or jaws, or who shall make examination of any human tooth, teeth, gums or jaws, or take an impression thereof for the purpose of treating or operating upon the same . . . shall be held to be practicing dentistry. . . .

The first count in the indictment charged that the college, a corporation, collected from a named patient a stated sum as payment for a full upper rubber plate and a partial lower rubber plate, prepared for the patient by a dental student in a clinic conducted and maintained by the college, such student not having obtained a license to practice dentistry in the state. The college contended that this count did not charge the doing of any act that would constitute the practice of dentistry within the meaning of the dental practice act; that the preparing or making of an upper and lower rubber plate by a student was not practicing dentistry, unless it was alleged that it was done as a part of the treatment of the teeth, mouth or gums of the patient or that the impression had been made by such student for the purpose of treatment or operating; and that the preparing or making of the plate was a purely mechanical act often done by laboratories for practicing dentists. The trial court erred in overruling the demurrer to this count, said the court of appeals. The count did not charge the doing of any act constituting the practice of dentistry. The making or preparing of an upper or lower plate may be an act purely mechanical which is not per se practicing dentistry. The taking of an impression and the fitting of a plate made from such an impression to the mouth of a particular person may constitute the practice of dentistry, but such acts were not charged in the count.

The second count alleged that the college charged and collected from a named patient a stated sum as payment for repair to an upper partial dental plate, by replacing a broken tooth therein, the service being performed by a student who had not obtained a license to practice dentistry. In the opinion of the court of appeals, the trial court erred again in overruling a demurrer to this count. Repairing a broken tooth in a plate does not constitute the practice of dentistry in Georgia.

The third count charged the college with having collected from a named patient a stated sum as payment for the cleaning of the patient's teeth at the clinic of the corporation, such service being performed by a student who had not obtained a license to practice dentistry. Cleaning teeth, said the court of appeals, does not constitute the practice of dentistry within the meaning of the dental practice act and the trial court erred in overruling the demurrer interposed by the college to this count.

The fourth count charged the dental college with collecting from a named patient a stated sum as payment for the extraction of a tooth, such service being performed by a student who had not obtained his license to practice dentistry. This count, said the court, charged an act falling within the statute defining what shall constitute the practice of dentistry, and the trial court committed no error in overruling the demurrer to the count.

The dental practice act of Georgia provides, further, that "No person lawfully authorized to practice dentistry in said State at the time of the passage and adoption of this Act shall be required to obtain any license or additional authority to practice dentistry in said State." The college contended that all the counts in the indictment were deficient in that they did not allege that the persons performing the acts charged in the indictment were not, at the time of the passage of the dental practice act, practicing dentistry, and hence authorized by the act to continue to practice without a license. But, said the court of appeals, the dental practice act also provides that, on the trial of any person for alleged violation of the dental practice act, it shall be "incumbent on the defendant upon proof that he practiced dentistry in said State, to show that he had authority under the law to so practice dentistry to exempt himself from the penalty of such violation." The foregoing provision, the court said, makes the having of a license or other authority to practice dentistry at the time of the passage of the act a defensive matter. It was not incumbent on the state to allege or prove that the defendant was not lawfully practicing dentistry at or prior to the passage of the dental practice act. The trial court properly overruled the demurrer to the indictment as a whole.

The judgment of the trial court in overruling the demurrers interposed to counts one, two and three of the indictment was reversed and its ruling on the demurrers to the fourth count and to the indictment as a whole was affirmed.—*Atlanta Southern Dental College v. State (Ga.), 180 S. E. 620.*

Workmen's Compensation Acts: Diabetes Mellitus Following Trauma.—As the workman was loading a 250 pound tank into a truck, he slipped and caught its weight in his arms as he was in a bent over position. He felt a strain or soreness through the stomach and across the back, but the soreness seemed to disappear during the day. About a week later he began to be troubled with frequent urination and with extreme hunger and thirst. Within two weeks he had lost 25 pounds in weight. He had to quit work within a month. Later a diagnosis of diabetes mellitus was made. Attributing his condition to the industrial accident, the workman instituted proceedings under the Kansas workmen's compensation act. A decision of the compensation commissioner denying him compensation was reversed by the district court, Chase county, and the employer and his insurance carrier appealed to the Supreme Court of Kansas.

The only question to be determined, said the Supreme Court, is whether or not the accident caused or accelerated diabetes mellitus in the workman to the extent that it disabled him. The only evidence on the matter was the testimony of the workman's physician that it was possible for an injury to the head, spine or pancreas to produce diabetes. In his opinion, it was possible for the strain which the workman underwent to cause the condition, but he could not say whether that condition was caused by the injury or by something else. The workman relied on the fact that he was apparently in good condition before the accident and began to be sick soon thereafter. But, said the court, the evidence produced by the claimant tends to prove nothing more than that the accident might have caused his condition. Before a claim for compensation can be sustained there must be substantial competent evidence to support it. Claims cannot be sustained that rest purely on conjecture. The conclusion to be drawn from the evidence here presented arises but little higher than a surmise or conjecture. The court, accordingly, reversed the judgment of the trial court and ordered a judgment entered against the workman.—*Whitaker v. Panhandle Eastern Pipe Line Co. (Kan.), 46 P. (2d) 862.*

Compensation of Physicians: Fraudulent Representations as to Ailment and Necessity for Medical Treatment.—Barker brought suit to recover a balance which he alleged was due him for "medical" services rendered to the defendant and her children. The defendant filed a cross-complaint asking, among other things, to recover back $775 already paid Barker, claiming she had been induced to employ him by his misrepresentation that he was a duly qualified physician and surgeon and misrepresentations as to the physical condition of herself and children. The trial court found that Barker's license to practice medicine was illegally issued to him, since he obtained it from the board of medical examiners of Washington in 1918 on the strength of a diploma from an osteopathic college whereas the then existing law, in effect, required graduation from a college conferring the degree of M.D. The court further found (1) that Barker had falsely represented that the colons of the defendant and her children were diseased when in fact their colons were normal and required no medical treatment, (2) that by reason of these false representations the defendant submitted herself and children to an extended course of treatment, consisting, apparently, of numerous high colonic irrigations, and paid Barker $775 therefor, and (3) that the

treatments were not beneficial. The trial court, however, dismissed both Barker's complaint and the defendant's cross-complaint and both parties appealed to the Supreme Court of Washington.

In the opinion of the Supreme Court, the findings of the trial court were sufficient to establish that Barker falsely and fraudulently misrepresented the physical condition of the defendant and her children to secure employment and that the defendant, relying on those misrepresentations, employed and paid him. Since, said the court, fraud vitiates every contract that may be based on it, money obtained by false and fraudulent misrepresentations may be recovered. The court accordingly entered judgment for $775 in favor of the patient.—*Barker v. Weeks (Wash.), 47 P. (2d) 1.*

Society Proceedings

COMING MEETINGS

American College of Physicians, Detroit, Mar. 2-6. Mr. E. R. Loveland, 133 South 36th Street, Philadelphia, Executive Secretary.

American Heart Association, New York, February 3. Dr. H. M. Marvin, 50 West 50th Street, New York, Acting Executive Secretary.

American Orthopsychiatric Association, Cleveland, Feb. 20-22. Dr. George S. Stevenson, 50 West 50th Street, New York, Secretary.

Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, Feb. 17-18. Dr. W. D. Cutter, 535 North Dearborn Street, Chicago, Secretary.

Southeastern Surgical Congress, New Orleans, March 9-11. Dr. Benjamin T. Beasley, 478 Peachtree Street N.E., Atlanta, Ga., Secretary.

Western Section, American Laryngological, Rhinological and Otological Society, Del Monte, Calif., Feb. 1-2. Dr. Carroll Smith, Paulsen Building, Spokane, Wash., Chairman.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Eighth Annual Meeting, held in Chicago, Nov. 1 and 2, 1935

The President, DR. CYRUS C. STURGIS, Ann Arbor, Mich., in the Chair

Alterations in Serum Proteins as Index of Liver Failure

DR. EDMUND FOLEY, DR. ROBERT W. KEETON, AARON B. KENDRICK, PH.D., and DUANE DARLING, B.S., Chicago: During the last two years serum albumin and serum globulin determinations have been made in cases of obvious or suspected liver injury. When there was advanced liver damage as substantiated by the clinical course of the case, the serum albumin was reduced with a reversal of the albumin-globulin ratio; with less damage the changes were not so marked. The alterations in the serum proteins in control cases of starvation, congestive heart failure and carcinomatosis with ascites were not significant. This evidence combined with that in the literature would indicate that the liver is an important site of serum albumin formation and that alterations in the serum proteins are an index of liver failure.

DISCUSSION

DR. ROBERT W. KEETON, Chicago: There were four cases of stone in the common duct. In three death followed within a short period in spite of conservative operative procedure. These three had a reversal of the albumin-globulin ratio with a lowering of the serum albumin prior to operation. There was another case of splenomegaly, in which we were considering diagnoses of cirrhosis and Hodgkin's disease. When it was found that the serum albumin value was not reduced, a diagnosis of Hodgkin's disease was adopted. We were able to confirm this later by biopsy and autopsy.

DR. DAVID P. BARR, St. Louis, Mo.: Was there any relation between the chemical observations, the number of tappings, and the rapidity with which the fluid reaccumulated?

DR. LEON SCHIFF, Cincinnati: I should like to ask whether the authors performed the Takata test on the same specimens of blood on which they made protein determinations.

DR. ALBERT M. SNELL, Rochester, Minn.: My associates and I have made serum protein determinations in a number of cases of hepatic diseases of various types with results that are almost identical to those reported by the authors. We thought at one time that there might be some correlation between increases in serum globulin and a positive Takata-Ara reaction, but our subsequent experience has not confirmed this. In both clinical hepatic disease and experimental hepatic injury with phenylhydrazine we have noted that a rise in globulin and a fall in albumin indicate increasing hepatic damage, whereas during periods of improvement the reverse is noted. Changes of this sort are so striking that we feel that alterations in the albumin-globulin ratio must have a definite prognostic significance.

DR. EDMUND FOLEY, Chicago: In these cases particular attention was given to whether the individual was tapped before the determination was made. None of these patients were tapped. We felt that if the individual had multiple tappings before the serum albumin-globulin determination was made, it would be evident that there would be sufficient loss of albumin to deplete the liver. Recently some work has been done in which tapping had been performed at regular intervals, and the aspirated amounts of albumin lost were determined and found to amount to from 10 to 18 Gm. a day, with no relationship between the amount of albumin in the fluid and blood proteins. We were interested in the Takata test for several reasons, one of which was that it was originally brought out for pneumonia and then applied as a differential diagnostic point between ordinary meningitis and syphilitic meningitis, and finally came down to be one of the liver function tests. Our experience with the Takata test has been very disappointing. Whether there was a misunderstanding of the technic or we did not carry it out as it should be, I do not know, but we were not able to get results. We were also interested in the relation to the Weltmann reaction, which was originally a liver function test and is now being used for the diagnosis of pneumonia.

Effects of Hypertonic Sucrose Solution on Patients with Hypertension

DRS. FRANCIS D. MURPHY, ALEX M. KATZ and RAYMOND HERSHBERG, Milwaukee: Our study includes eighteen cases of benign essential hypertension, eight cases of malignant hypertension and two cases of chronic glomerular nephritis with hypertension. All spinal fluid pressures are obtained by using an indwelling spinal tap needle, and readings were taken every fifteen minutes after the mean level of the blood pressure and pulse was established. The investigation in each case was continued as long as the patient was able to retain the indwelling spinal tap needle. We reached the following conclusions: 1. Intravenous hypertonic sucrose (50 per cent) solution causes prolonged and pronounced reduction of spinal fluid pressure. 2. Intravenous hypertonic sucrose solution causes a slight reduction of the blood pressure. 3. Headaches and convulsions are controlled more readily with hypertonic sucrose solution than with other forms of treatment used by us. 4. Following such treatment, the patients seem to be clinically improved. 5. Further data on the effect of the administration of such solutions on the changes in the eyegrounds are being collected and will be ready for presentation in the near future.

DISCUSSION

DR. FRANCIS D. MURPHY, Milwaukee: I should like to discuss the therapeutic implications suggested by this report. In cases of chronic nephritis with hypertension and in malignant hypertension there are times when the most aggravating symptoms are due not to renal failure but to increase of intracranial pressure. It is desirable at times to reduce the intracranial pressure to avoid convulsions and other unfavorable sequelae. In 1908 Cushing did subtemporal decompression to save the eyesight of patients who had hypertension. Lumbar puncture has been used for the reduction of increased cerebral pressure. However, undesirable results may follow this procedure. Cases have been reported in which the patient died following lumbar puncture and at autopsy it was found that the medulla oblongata had been pressed into the foramen magnum. Following the experimental work of Weed and McKibben in 1919, wherein they showed that intravenous hypertonic saline and dextrose solutions reduced intracranial pressure, this measure was applied clinically, chiefly by surgeons. More recently, however, Masserman and others have shown that the introduction of hypertonic dextrose solution is followed by a

drop in cerebrospinal fluid pressure, but that within a few hours there is a secondary rise above the basic level, thereby aggravating the symptoms that the treatment was supposed to cure. Recent work in the physiologic laboratory by Bullock, Gregersen and Kinney showed that 50 per cent sucrose solution would reduce the cerebrospinal fluid and sustain the reduction for hours, and there was no secondary rise above the basic level. Taking advantage of this work, we have used sucrose solution, 50 per cent intravenously, in an attempt to reduce spinal fluid pressure in patients with hypertension, especially those with the malignant form. We were impressed with sucrose because, first, it is nontoxic; second, it reduces the spinal fluid pressure and sustains the reduction; third, it is a powerful diuretic. We believe from this preliminary work that sucrose solution is worthy of trial. It does not affect the primary lesion in the disease but it makes the patient feel better.

DR. M. W. BINGER, Rochester, Minn.: My associates and I have been using concentrated sucrose solution in cases of malignant hypertension but not in the concentration used by the authors. We gave it intravenously in 25 per cent solution with 3 per cent acacia. We have had good results in patients with severe headaches that were not amenable to other methods of treatment. We have noted the powerful diuretic effect. I should like to ask whether they have had any experience in cases of congestive heart failure and myocardial degeneration and, if so, whether it changes the final outcome of these cases. Our experience with malignant hypertension is that the disease progresses regardless of therapy.

DR. ALEX M. KATZ, Milwaukee: We gave sucrose in two cases of myocardial degeneration, one in which gallop rhythm was present and the other with congestive failure. In giving sucrose solution one must be careful to run the solution very slowly.

Studies on the Physiology of Fever

DR. WALTER M. SIMPSON, Dayton, Ohio: The development of a relatively simple air-conditioned apparatus, known as the Kettering hypertherm, for the induction and maintenance of artificial fever, has provided a suitable means to study the physiologic effects of fever, uncomplicated by infection. The hyperventilation that accompanies fever causes considerable loss of carbonic acid. Blood and tissue chlorides are lost in the sweat. This loss of acid ions induces some degree of alkalosis in patients who are subjected to high fever for several hours. Supplying large quantities of chloride by mouth (from 2 to 4 liters of 0.6 per cent sodium chloride solution), and the inhalation of oxygen-carbon dioxide, helps to combat the alkalosis. The basal metabolic rate is elevated 5.5 per cent per degree (Fahrenheit) of temperature elevation during the maintenance period. The electrocardiogram shows only minor transient alterations. The pulse rate increases 7 beats per degree (Fahrenheit) of temperature elevation during the maintenance period. There is no evidence of essential difference in pulse rate or other physiologic responses to fever induced by either air-conditioned external heat or so-called internal heat (high frequency) methods. Direct leukopoietic stimulation is indicated by the marked and sustained increase of polymorphonuclear leukocytes, with a distinct shift to the left in the Schilling hemogram. The normal thermometric gradient of deep and superficial structures is abolished during sustained artificial fever. The rectal temperature provides a reliable index of the temperature attained in the deep structures during fever. The mouth temperature is not reliable.

DISCUSSION

DR. PAUL S. BARKER, Ann Arbor, Mich.: I should like to ask Dr. Simpson whether the patients who showed electrocardiographic changes had significant degrees of alkalosis.

DR. PHILIP S. HENCH, Rochester, Minn.: Dr. Simpson and his colleagues have demonstrated many physiologic reactions to artificial fever, some of them beneficial, others to be avoided or minimized if possible. In spite of these diverse reactions, many of which are profound, the procedure is essentially a safe one, and through their work they have helped to make it safe. I am sure therefore that he would want us to know that every now and then the most profound physiologic reaction of all may occur; namely, death. In spite of careful selection of patients and the supervision of a trained hospital staff, this catastrophe may occasionally eventuate. Dr. Simpson has, I believe, treated more than 400 patients without a single death, which is an excellent record. A few months ago the Council on Physical Therapy of the American Medical Association reported on the national experience with fever therapy to date. Of 4,809 patients with various diseases who were treated by different physicians throughout the country, twenty-nine died, a mortality of 0.6 per cent. Many of the patients had advanced neurosyphilis, and undoubtedly some of the deaths should have been ascribed to that and not to artificial fever. At the Mayo Clinic we have had only one death among more than 325 patients who were treated in this manner. Although the one patient who died, a young woman, was given a very careful preliminary physical examination, she died shortly after the initial session of fever. The cause of death could not be determined. We have a right to conclude that the administration of artificial fever is an essentially safe procedure when applied in a hospital by a specially trained personnel. Under these circumstances the mortality should be very small. Nevertheless, the fact should be faced that such therapy, even when carefully administered by approved technic, will be followed every once in a while by a serious uncontrollable physiologic reaction.

DR. WALTER M. SIMPSON, Dayton, Ohio: Since some degree of alkalosis is uniformly present in persons subjected to high, sustained artificial fever, it is quite likely that some of the alterations in the electrocardiogram are related to this disturbance in acid-base equilibrium. I am glad that Dr. Hench has reemphasized the fact that artificial fever therapy is not without hazard. While its usefulness in the treatment of gonococcic infections, syphilis and chorea has been demonstrated, its application to other diseases is still in the experimental stage. Artificial fever therapy should be undertaken only in institutions with skilled physician and nurse personnel. It is not adaptable to ordinary office practice. We have subjected our 400 patients to some 20,000 hours of sustained fever therapy without fatality.

Direct Venography in Obstructive Vein Lesions

DRS. NELSON W. BARKER and JOHN D. CAMP, Rochester, Minn.: Previous roentgenographic visualization of veins after intravenous injection of opaque mediums has been limited largely to the study of varicosities. A simple technic is described for use, particularly in obstructive lesions. The medium Diodrast (3.5-*di*iodo-4-pyridone-*N*-acetic acid and diethanolamine) is harmless, is rapidly excreted from the body and is sufficiently opaque. Studies have been made of patients who had both intrinsic and extrinsic obstructive lesions of the saphenous, femoral, iliac, subclavian and jugular veins. A knowledge of venous pathology and physiology is necessary for correct interpretation of the plates. It is felt that in certain cases direct venography may be of definite diagnostic aid.

Arteritis of the Temporal Vessels

DRS. BAYARD T. HORTON, GEORGE E. BROWN and THOMAS B. MAGATH, Rochester, Minn.: This report presents a new clinical syndrome, the etiology of which is still obscure. Five subjects who had temporal arteritis and periarteritis, with local and systemic manifestations, were studied. The duration of symptoms was from four to six weeks. Raised, red, tender areas were present along the temporal vessels and over the scalp. Fever, weakness, anorexia, loss of weight, anemia and mild leukocytosis were present; eosinophilia was absent. Segments of the temporal artery from each patient were resected for microscopic study, culture, and inoculation of animals. Each patient made a satisfactory recovery. Both cultures of the vessels and experimental studies on animals gave negative results. Microscopic sections of the arteries showed acute and subacute thrombosis and round cell infiltration in the adventitia and media, with almost complete destruction of the medial coat and its replacement with a granulomatous-like tissue with numerous giant cells. Reports of similar cases have not been noted in a review of the literature.

DISCUSSION

DR. W. M. CRAIG, Rochester, Minn.: Having operated in a number of the cases presented by the authors, I was interested in the amount of clinical relief secured following resec-

tion of the vessels, and also in the gross appearance of the lesion. The operations were carried out under local anesthesia, with very little discomfort to the patient; the involved vessels were ligated above and below and resected. There was much less localized periarteritis than we had anticipated, making resection quite easy. The wounds healed satisfactorily and there was very little postoperative discomfort.

DR. HARRY A. SINGER, Chicago: I should like to report two instances of arteritis, one involving the temporal vessels similar to the series just described and the other affecting the arteries of the gallbladder. The first patient was a woman in her late fifties, who was admitted to the dispensary of the University of Illinois in 1930. She had suffered during the previous year from symptoms referable to a polyarthritis, and a polyneuritis accompanied by fever, asthenia and a loss of 60 pounds (27 Kg.). Her chief complaint at the time of admission to the dispensary was pain in the head associated with the presence of pea-sized, red, tender nodules along the course of the temporal vessels. A clinical diagnosis of periarteritis nodosa was made and a nodule removed for biopsy. The microscopic section showed an artery cut longitudinally together with the overlying skin. A dense infiltration of inflammatory cells about and within the wall of the blood vessel was observed. The intima of the artery was greatly thickened and the lumen correspondingly narrowed. After a few weeks of symptomatic treatment the patient recovered and felt well during the remainder of the period of observation, which was one year. The second patient, a man in his middle forties, died in what appeared to be a uremic state. He had had a positive Wassermann reaction and had received intensive antisyphilitic treatment. The autopsy was performed by Dr. R. H. Jaffé, who found a ruptured gallbladder filled with clotted blood. No stones were present. On inspecting the lining of the gallbladder, Dr. Jaffé observed peculiar superficial ulcers with geographic outlines and from the gross appearance diagnosed periarteritis nodosa. He removed an unusually large number of blocks of tissue from various structures and organs for microscopic examination, expecting to find changes in the blood vessels elsewhere. Surprising as it may seem, the vascular changes were found to be restricted to the gallbladder. A section of the wall in the intact portion showed considerable to extreme thickening of the intima of the arteries. In a microscopic section of an ulcerated portion of the gallbladder wall the lumen of the blood vessel was seen to be practically obliterated and the wall and the surrounding tissues infiltrated with round cells. Elastica stains demonstrate that the vasculitis was not syphilitic. The changes in the gallbladder were obviously recent and those in and about the arteries were old. The ulceration was therefore on an ischemic basis. The cases presented by Dr. Horton and his collaborators and my first case indicate that there exists a benign form of periarteritis nodosa. My second case suggests that arteritis may be localized in various parts of the body.

DR. JOHN A. MACDONALD, Indianapolis: I should like to ask whether resection of the vessels influences the clinical course. In my one case of temporal arteritis, in all ways identical with those described by the authors, in a woman, aged 60, resection of the vessel was followed by immediate cessation of the fever and rapid recovery.

DR. DAVID P. BARR, St. Louis: I should like to ask Dr. Singer whether the vessels involved in the gallbladder were veins or arteries. Some time ago Dr. Kountz had the opportunity of studying a case of periarteritis nodosa and found involvement of the arteries in many parts of the body, but no involvement of veins except in the gallbladder.

DR. SINGER: The vascular alterations in the gallbladder affected the arteries.

DR. BAYARD T. HORTON, Rochester, Minn.: No doubt more cases of arteritis of the temporal vessels will be recognized after the medical profession has become acquainted with the interesting clinical syndrome that we have just described. Six weeks ago Dr. George E. Brown received a detailed letter from a Dr. Mathew C. Riddle of Portland, Ore., describing an identical case. The patient was a man, aged 65. The course was similar to that in the cases just reported, and complete recovery occurred. We observed our first case four years ago. The patient was a man, aged 68 at that time. Six weeks ago I had a letter from him saying that he was perfectly well, with no recurrence whatever.

The Impedance Angle as a Test for Hyperthyroidism

DR. FRANKLIN D. JOHNSTON, Ann Arbor, Mich.: For the past twelve months the impedance angle or phase angle of normal subjects and patients with hyperthyroidism has been measured according to the method described by Brazier. The phase angles of normal adult males and females fall into two distinct groups according to sex and, while considerable individual variation is noted, the averages of each group agree closely with the results of Brazier. Patients with hyperthyroidism show definitely lower phase angles, usually outside the limits of normal variation and occasionally 50 per cent or more below the average normal value for the patient's sex. The results obtained so far appear to be reliable, and if the method is properly used and its accuracy constantly checked it may be of clinical value.

DISCUSSION

DR. ARLIE R. BARNES, Rochester, Minn.: I am glad this subject has been presented in a conservative way and that conservative claims have been made for it. Last fall, while in London, I had the pleasure of visiting the Courtauld Institute of Biochemistry, and this question of the impedance angle was being investigated in the laboratory of Drs. Dodds and Robertson at that time. They had practically completed their investigation and they felt that the work of Brazier was open to criticism from two points of view, the first being that the values obtained in normal patients were subject to a greater variation than she had indicated, and in the second place they found that while there was a certain amount of correlation between the basal metabolic rate and the phase angle there were too many instances in which the two values did not agree. They had a definitely unfavorable reaction to the employment of the phase angle determination as a practical means of diagnosis in hyperthyroidism.

DR. E. L. SEVRINGHAUS, Madison, Wis.: Has any information been obtained on the variations of the phase angle caused by changing the conductivity of the body tissues?

DR. ALEX M. KATZ, Milwaukee: It seems to me that this phase angle would measure the vascularity of the tissues, whether it is in venous disease of the extremity, edema or cardiac failure. Has this study been carried out in abnormal patients who might have changes in the skin?

DR. M. A. BLANKENHORN, Cincinnati: Does the phase angle vary with age and with sex? This question expresses the same idea as Dr. Katz had with regard to the vascularity and nutrition of the skin in hyperthyroidism. The bedside physician is impressed with the texture and moisture of the skin as observed by feeling. What is the phase angle in children and in women?

DR. HUGO A. FREUND, Detroit: About a year ago my associates and I began to study hyperthyroid cases by the use of the phase angle. We were intrigued by the favorable reports from Dr. Brazier and the German clinics. Dr. Sneck at Harper Hospital studied a number of cases recently, but his results were not as favorable as those reported by Dr. Johnson. One other very interesting feature that was brought out was that the electrolytes of the body change the angle; that if the blood chlorides are low the phase angle will be low and vice versa.

DR. FRANKLIN D. JOHNSTON, Ann Arbor, Mich.: There appears to be considerable interest with regard to this method. At the Lahey Clinic in Boston a number of cases were studied and it was concluded that the method was not highly reliable. It was felt that it fell down particularly in the borderline cases in which diagnostic help was needed. Children show uniformly low phase angles, and no sex difference is apparent until puberty. As far as I know there have been no careful studies made on children of various ages. Most of the children we have tested gave phase angles between 0.080 and 0.100, but my present feeling is that the method will not be of great value in children. Regarding dehydration, we have made observations on one normal subject who was maintained on a dry diet with no added fluid for several days. At the end of this period, although the urinary specific gravity was

one of the highest ever attained in a normal subject, the phase angle was reduced only about 0.015 from control observations and was still well within limits of normal variation. In response to Dr. Katz's question about phase angle studies in patients with vascular lesions, we have made no studies with this question in mind. There are many diseases and pathologic states that remain to be investigated and we hope that the presentation of the method today may interest other workers. We know practically nothing of the actual electrical properties of the body or why the phase angle is lowered in hyperthyroidism. An observation of Crile that the tissues of patients with hyperthyroidism show an increased permeability to ions may have some bearing on the question. Under these circumstances one would expect a reduction in the electrical capacitance and resistance of the tissues, and both of these changes might cause a decrease in the phase angle. I wish to mention the six women with high metabolism tests who showed phase angles higher than the average normal value for women. Three of them had diabetes and the most marked exception of the group had a carcinoma of the breast. It seems important to study a number of patients with diabetes and other diseases to see whether conditions besides hyperthyroidism may influence the phase angle. I have studied a few diabetic patients but have found no definite relation between hyperglycemia or acidosis and the phase angle. Finally, the importance of constantly checking the accuracy of the results obtained by the frequent measurement of individuals whose phase angles are known cannot be overemphasized. It has been found that accidental minor changes in the electrical connections or the electrodes may produce significant changes in the observed phase angles, so that frequent control determinations are important.

Induction of the Refractory State of the Thyroid to Thyrotropic Hormone

DRS. R. C. BRUNER and PAUL STARR, Chicago: It was shown last year that, during the continuous injections of large doses of the pituitary thyrotropic hormone, guinea-pigs sustained a period of intense thyroid activity followed by a period in which the thyroid was refractory to any further injections. In this paper it is demonstrated that, in guinea-pigs, succeeding short periods of injections of dosages producing only slight thyroid activity with five to ten days' rest between courses of injections will rapidly induce a refractory state, such that the injection of 400 times the original dose is often without any effect. Repeated basal metabolism tests are used to measure these effects. It is thought that recognition of such a phenomenon may be of clinical importance.

DISCUSSION

DR. WILLARD O. THOMPSON, Chicago: I should like to mention observations that are in agreement with those reported in animals by Drs. Bruner and Starr and others. Drs. Taylor, Phebe K. Thompson, Dickie and I made a report last year before this society on the calorigenic action of pituitary extracts in man and showed that the effect was temporary in spite of prolonged administration. In some of the patients, subsequent injections of the extracts have been made without any increase in metabolic rate. In two patients, in whom the administration had to be interrupted before the metabolism had returned to its premedication level, a second course of treatment did produce an increase in metabolism, while in a third patient no effect was noted under these circumstances. In some patients with exophthalmic goiter the metabolism finally dropped to a lower level than before the administration was started, usually after an initial increase.

The Dietary Management of Diabetes

DR. CYRIL M. MACBRYDE, St. Louis: Although the present tendency in the treatment of diabetes is to allow increasingly large amounts of carbohydrate in the diet, students of the disease have differed widely in their opinions concerning the optimal balance of the various foodstuffs. Even now, twelve years after the introduction of insulin, there are advocates of high fat diets employed with the idea of resting the pancreas and raising the tolerance to carbohydrate, while others advise high carbohydrate to stimulate the pancreas. Since in individual cases relatively good results are obtained by apparently opposite types of diet, it would seem that the optimum lies somewhere between. This position has been taken by many, who, like Joslin, give moderate amounts of both fat and carbohydrate. Another possibility may be considered: certain diabetic patients do best on high carbohydrate and others on high fat. This was suggested in a study started three years ago, in which it was found that diabetic patients fall roughly into two groups, the relatively insulin sensitive and the relatively insulin resistant. The insulin-sensitive or "insular" type seems to be caused primarily by decreased production of insulin, while the insulin-resistant, "extra-insular" type may be at least partly caused by an antagonistic factor or factors diminishing the effectiveness of insulin whether its source be exogenous or endogenous. Special studies were then undertaken to determine whether the two groups differed in their responses to fat and carbohydrate. Twelve patients have been intensively studied, each of them being observed for from three weeks to three months in the hospital and from six months to two years in the outpatient department. It was found that the sensitive type tends to lose tolerance on prolonged carbohydrate feeding, while fat is well borne. The resistant type gains tolerance with high carbohydrate and loses it with high fat. It is suggested that in the sensitive type exhaustion of the overtaxed islets can occur, while in the resistant group increased stimulus to the islets and inhibition of antagonistic factors results with high carbohydrate diets. Determination of the relative response to insulin would seem important in deciding on the optimal diet for each diabetic patient.

DISCUSSION

DR. HENRY J. JOHN, Cleveland: I should like to ask Dr. MacBryde whether he differentiates these two groups only on the dosage of insulin; if so, whether there can be a transmutation of these cases; whether one will get an insulin resistant case today and in two or three months the same case can be insulin sensitive. A little girl, aged 5 years, for six weeks was given 100 units of insulin each morning and night. There was no insulin reaction. A month or two later if I gave the child more than 20 units of insulin she would have an insulin reaction. That state has not changed. Consequently, in the early period she might have been classed as insulin resistant whereas now she is insulin sensitive. Also I should like to ask what criteria he used for his extra-insular group.

DR. SAMUEL SOSKIN, Chicago: The differentiation between the two types of diabetic patients, which have been commonly called the older type and the younger or juvenile type and which seem to correspond to the "insulin resistant" and "insulin sensitive" types respectively, is familiar to most clinicians. I am interested in Dr. MacBryde's classification because of recent work in interpreting the metabolic disturbance in diabetes mellitus in terms of the regulatory mechanism of the liver. From this point of view the insulin sensitive type of diabetic patient is one with a disturbed regulatory mechanism but a normal functional capacity. As Dr. MacBryde has pointed out, this type is usually found in the younger age groups. The insulin resistant type of diabetic patient, on the other hand, occurs more frequently in older persons. In these individuals the liver is not only out of control but has also been relatively insensitive to the regulatory hormones because of a long succession of damaging insults. These factors account for the difference in the reaction of the two types of diabetic patients to insulin and for the more favorable action of dextrose in the insulin resistant type. There is evidence as to the beneficial effects of dextrose on liver function in any form of toxemia.

DR. CYRIL M. MACBRYDE, St. Louis: In answer to the first question, none of these cases showed any of the marked temporary changes usually indicated by the term "insulin resistant." They did show a relatively poor response to insulin over a long period of time. Some of these tests were repeated at the end of two years. There was no obvious reason why these patients should not react better to insulin. Concerning the second question, the term "extra-insular" is used only to stimulate thought on the subject. There is no proof that this relative resistance is caused by extra-insular factors. There are many facts to suggest it, however. The third comment concerning the rôle of the liver in causing this relative insulin resistance, I consider very pertinent. The liver must be one of the most important factors but I doubt that it is the only one that causes this type of reaction.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

25: 501-720 (Nov.) 1935

Chordoma: Study of One Hundred and Fifty Cases. R. E. Mabrey, Boston.—p. 501.

*Bone Metastasis in Carcinoma of Stomach: Report of Five Cases. H. D. Kerr and R. A. Berger, Iowa City.—p. 518.

Malignant Myoma. J. McFarland, Philadelphia.—p. 530.

Carcinoma of Stomach in Identical Twins. R. E. Militzer, Wrentham, Mass.—p. 544.

Quantitative Investigation on Occurrence of Vitamin G in Rat Sarcoma, Including Comparison with Vitamin G Content of Liver Tissue from Same Animals. L. B. Brabec, New York.—p. 551.

Relationship Between Vascularity and Reaction to Radium of Squamous Epithelium. M. G. Seelig, C. T. Eckert and Zola K. Cooper, St. Louis.—p. 585.

Effect of Prolonged Cyanide Treatment on Body and Tumor Growth in Rats. Isabella H. Perry, San Francisco.—p. 592.

Genetic Appearance of Spontaneous Carcinoma of Mammary Gland in C_3H Mice. L. C. Strong, New Haven, Conn.—p. 599.

Effect of Oil of Allspice on Incidence of Spontaneous Carcinoma in Mice. L. C. Strong, New Haven, Conn.—p. 607.

Metastasis of Carcinoma of Breast to Supraclavicular Lymph Nodes. E. T. Leddy and A. U. Desjardins, Rochester, Minn.—p. 611.

Breeding Behavior and Tumor Incidence of Black Agouti Stock of Mice. J. J. Bittner, Bar Harbor, Maine.—p. 614.

Sarcoma of Soft Parts Observed at the Collis P. Huntington Memorial Hospital 1924-1929: Results of Treatment. C. C. Simmons, Boston.—p. 621.

*Statistical Study of Relation of Parity to Carcinoma of Cervix Uteri. P. Tompkins, Philadelphia.—p. 624.

Concerning Proper Use of Standard Deviation of Mean Tumor Diameter. F. Bischoff, Santa Barbara, Calif.—p. 628.

Tumors of Connective Tissue. C. F. Geschickter and D. Lewis, Baltimore.—p. 630.

Bone Metastasis in Carcinoma of Stomach.—Kerr and Berger draw attention to the fact that, though carcinoma of the stomach is one of the most common malignant tumors of adult life, bony metastases from this source are infrequent. The total number of cases showing bone involvement is variously stated as from 1 to 22 per cent of the total (Schinz, Fraenkel) though the usual figure is less than 6 per cent (Müller, Von Glahn, Colwell, Symmers). The reported incidence depends obviously on whether the authors' observations have been made at necropsy or roentgenographically and, in either case, on the thoroughness of the search. In any event, metastatic involvement of the bones certainly is relatively low in gastric cancer as compared, for example, to that in carcinoma of the breast and prostate. The authors collected 143 apparently authentic cases in the literature, with a case or two of direct invasion and one doubtful case. To these they add three cases with roentgen evidence of osseous involvement and two found at necropsy, bringing the total number to 148. They observed that metastasis to bone is most frequent at the sites of the red marrow—spine, ribs, femur, sternum and pelvis. Metastases are either osteoplastic, osteoclastic or both, without regard to the characteristics of the primary lesions. The site, size and type of the primary tumor seem to have nothing to do with the appearance of osseous involvement. Bone metastasis is more frequent in the relatively young, although it may occur at any age. Dissemination is probably through the blood stream. Some cases show an anemia which morphologically cannot be distinguished from a primary type and which may show a large percentage increase in immature cells of the myeloid series.

Relation of Parity to Carcinoma of Cervix Uteri.—Tompkins points out that, although it is generally believed that childbirth predisposes to the development of carcinoma of the cervix uteri, a survey of the literature disclosed no convincing reasons for this belief. He has made a statistical inquiry into the relation between childbirth and cervical carcinoma. The data for this study were taken from the Report of the Bureau of the Census for 1930, Mortality Statistics for 1930, and medical publications. The study is limited to women in continental United States during the year 1930. Only women aged 30 or more are considered. Most parous women (88 per cent) bear their first child before this age, and most cervical carcinomas (96 per cent) occur after this age. In brief, the method of the inquiry was to estimate the number of parous and nulliparous women living in the United States in 1930, and the numbers of each dying from cervical carcinoma in the same year. From these figures the death rates from cervical carcinoma in the two groups were calculated and compared. It is doubtful whether the relation between parity and cervical carcinoma can be reliably determined from the statistics at present available. However, from computations based on such data as could be secured, it appears that in the United States in 1930, among women 30 years of age or more, the death rate from carcinoma of the cervix was at least twice as great among those who had borne children as among those who had not.

American J. Obstetrics and Gynecology, St. Louis

30: 609-762 (Nov.) 1935

Experience with Multiple Dose Roentgen Therapy in Malignant Diseases of Uterus and Ovaries. W. P. Healy, New York.—p. 613.

*Physiologic Changes Occurring in Urinary Tract During Pregnancy. J. M. Hundley Jr., H. J. Walton, J. T. Hibbitts, I. A. Siegel and C. B. Brack, Baltimore.—p. 625.

Histogenesis of Certain Ovarian Tumors and Their Biologic Effects. S. H. Geist, New York.—p. 650.

Toxemias of Late Pregnancy. W. A. Thomas, E. D. Allen, C. P. Bauer and M. R. Freeland, Chicago.—p. 665.

Treatment of Vesicovaginal Fistulas: Past and Present. N. F. Miller, Ann Arbor, Mich.—p. 675.

Tubal Reimplantation—In Retrospect. G. de Tarnowsky, Chicago.—p. 696.

Hematometra. J. A. McGlinn and W. B. Harer, Philadelphia.—p. 704.

Consideration of Phenomenon of Ovulation and Its Relation to Sex Cycle. I. F. Stein, Chicago.—p. 710.

*Clinical Test of Newly Recognized Oxytocic Principle of Ergot and New Method of Administration. V. L. Tuck, Sherman, Texas.—p. 718.

Primary Carcinoma of Fallopian Tube: Report of Case. W. T. Dannreuther, New York.—p. 724.

Mono-Amniotic Twins, One Normal, the Other Anencephalic; Multiple True Knots in Cords. S. Litt and H. A. Strauss, Chicago.—p. 728.

Chorionepithelioma Following Full Term Pregnancy: Case Report. C. B. Lull, Philadelphia.—p. 730.

Spontaneous Evolution of Transverse Presentation. W. G. Fraser, Brooklyn.—p. 732.

Brenner Tumor of Ovary. P. H. Smith, Evanston, Ill.—p. 734.

Changes in Urinary Tract During Pregnancy.—Hundley and his associates studied the ureteral changes throughout the entire course of gestation as well as in the puerperium. The study was begun with thirty-five normal pregnant women who had no past history of any urinary infection and whose urine was microscopically and culturally normal. The most constant change in the urinary system was a dilatation of the pelvis and calices of one or both kidneys, a dilatation and tortuosity and kinking of one or both ureters, and a lateral displacement of these structures. Every patient showed some deviation from the normal, ranging from a slight dilatation to a marked degree of hydronephrosis and hydro-ureter. The right kidney and ureter were affected more often than the left, but the left ureter was displaced laterally more frequently. The portion of the ureter that runs over the pelvic wall was not visualized, whereas the pelvic ureter was often well outlined. In examinations from the ninth to the fifteenth week there were thirteen patients studied, and the pelvic ureter was visualized in all but one. Eleven of these showed some lateral displacement, while slight tortuosity of the left ureter was noted in two. Only three showed slight dilatation of this pelvic portion of the ureter, two being on the right and one on the left. With the advance of pregnancy, the dilatation of the ureter and pelvis increased gradually. Following delivery there is a return of the urinary system to normal. Of twenty-six patients examined after delivery, eighteen showed a return to normal in twenty-eight days. The presence of frank infection greatly retards and delays the normal involution processes. However, the cases studied were normal and showed no signs of an inflammatory process. Dilatation of the urinary tract occurred earlier in the multiparas than in the primiparas. All the patients studied delivered normally. The authors show that the primary changes in the

ureter are hormone-like in action and consider the subject of pressure, which is the second etiologic factor in the causation of dilatation. In support of the theory of pressure they observed that in catheterizing the right ureter during the latter part of pregnancy, with a catheter armed with a number 4 mm. wax bulb, definite obstruction and "hang" are encountered at the pelvic brim. When the same procedure is done following delivery, no obstruction or "hang" is encountered, showing that whatever obstruction existed during pregnancy was relieved by the birth of the child.

Oxytocic Principle of Ergot and Its Administration.—Tuck thinks there must be many advantages in the use of the oxytocic principle of ergot, since the lochia is almost free from a bloody tinge after three or four days when the alkaloid has been used in the early puerperium. The theoretical objection raised by many who have no practical experience with the rectal administration of the oxytocic is that there is danger of its causing infection in the genital tract, a possible danger which has not become apparent in the author's series. The morbidity (according to his standard of any elevation of temperature of more than 100 F. occurring twice in twenty-four hours, after the first twenty-four hours after delivery) in 204 patients receiving the drug orally and hypodermically was 14 per cent. In 128 patients receiving the drug rectally at delivery the morbidity was only 9 per cent. No maternal deaths occurred. It would seem that the rectal route when used properly offers no more danger of infecting the mother than the oral and hypodermic routes. The results in the 332 women were uniformly satisfactory, regardless of the mode of administration. No bad results were encountered and the action of the drug indicates that it is far superior to any of the older known oxytocic ingredients of ergot. Rectal administration is recommended, as the contractile response of the uterus is more rapid (from one to two and a half minutes).

American Journal of Ophthalmology, St. Louis

18: 1003-1086 (Nov.) 1935

Studies of Retinal Circulation by Direct Microscopy. R. K. Lambert, New York.—p. 1003.
Aniseikonia: Factor in Functioning of Vision. A. Ames Jr., Hanover, N. H.—p. 1014.
Study of Pneumococcus Group from Inflamed Conjunctiva and Lacrimal Sac. S. H. McKee, Montreal.—p. 1021.
Traumatic Ophthalmoplegias as Workmen's Compensation Problem. M. Davidson, New York.—p. 1030.
Illumination Intensities for Reading. M. A. Tinker, Minneapolis. —p. 1036.
Newer Developments in Photography of the Eye. W. A. Mann Jr., Chicago.—p. 1039.
Ocular Chalcosis. R. von der Heydt, Chicago.—p. 1045.
Lid-Closure Reflex of Pupil. B. Boshes and L. L. Mayer, Chicago. —p. 1048.

American Journal of Pathology, Boston

11: 895-1034 (Nov.) 1935

Studies on Relation Between Microglia, Histiocytes and Monocytes. H. S. Dunning and J. Furth, New York.—p. 895.
*The Cutaneous Glomus and Its Tumors—Glomangiomas. O. T. Bailey, Boston.—p. 915.
Corneal Reactions of Normal and of Tuberculous Guinea-Pigs to Tuberculoprotein and Tuberculophosphatide. S. W. Holley, Chicago. —p. 937.
Significance of Cellular Variations Occurring in Normal Synovial Fluid. C. F. Warren, G. A. Bennett and W. Bauer, Boston.—p. 953.
Effect of Centrifugation on Herpetic Intranuclear Inclusions, with Note on Cytoplasmic Inclusions of Unknown Origin in Rabbit Cornea. A. M Lucas and W. W. Herrmann, Iowa City.—p. 969.
Primary Amyloidosis Limited to Tissue of Mesodermal Origin. H. A. Reimann, R. F. Koucky and C. M. Eklund, Minneapolis.—p. 977.
Spontaneous Rupture of Pulmonary Artery. J. B. McNaught and W. Dock, San Francisco.—p. 989.
Neurofibroma of Pharynx Associated with von Recklinghausen's Disease. A. H. Davis, Paterson, N. J.—p. 1001.
Technic for Demonstrating Perivascular Nerves of the Pia Mater and Central Nervous System. W. Penfield, Montreal.—p. 1007.
Papillomatosis Peritonei. A. H. Wells, Kansas City, Mo.—p. 1011.

Cutaneous Glomus Tumors.—Bailey states that the cutaneous glomus is an arteriovenous anastomosis in the stratum reticulare of the cutis, which is homologous with the glomus coccygeum and several less important vascular structures. It has an important function as an arteriovenous shunt in maintaining the body temperature and perhaps the blood pressure. From the cutaneous glomus, tumors arise that form a subgroup of the hemangioma. The term glomangioma is suggested for them to indicate their derivation and character. Glomangiomas appear as small bluish nodules on the extremities or adjacent portions of the shoulder girdle. Very frequently they are located in the nail bed. Microscopically the tumors are composed of cells identical with those in the walls of the normal cutaneous glomus and its homologues. Nerve trunks are numerous in the connective tissue about the tumors, and nerve filaments pass among the glomus cells in large numbers. Occasionally elongate smooth muscle cells are seen either in solid masses or adjacent to vascular lumens. The glomangiomas represent the overgrowth of the entire arteriovenous anastomosis and in doing so their cells show a twofold differentiation. The elongate smooth muscle cells lose all myofibrils, while the reticulum investing them becomes much coarser and stains intensely with collagen stains. Secondly, the periglomic nerves grow into the tumors, and their terminal filaments end about the differentiating smooth muscle cells with the interposition of nerve endings. These two processes result in the formation of the glomus cells and are apparently interdependent. The tumors are associated clinically with severe radiating pain of neuralgic type. In character and distribution this has many similarities to the response of the normal glomus to much greater stimuli of the same character. Glomangiomas thus represent functionally as well as morphologically organoid overgrowths. Glomangiomas do not become malignant. Local excision gives complete and permanent relief from symptoms.

American Journal of Tropical Medicine, Baltimore

15: 605-722 (Nov.) 1935

Schizogonous Cycle of Plasmodium Vivax, Grassi and Feletti. M. F. Boyd, Tallahassee, Fla.—p. 605.
*Atabrine and Plasmochin in Treatment and Control of Malaria. D. L. Seckinger, Atlanta, Ga.—p. 631.
Treatment of Malaria with Short Course of Quinidine. J. P. Sanders, Caspiana, La.—p. 651.
Occurrence of Avian Malarias in Nature. R. D. Manwell and C. Herman, Syracuse, N. Y.—p. 661.
Protective Action of Neurotropic Against Viscerotropic Yellow Fever Virus in Macacus Rhesus. M. Hoskins, Bahia, Brazil, South America. —p. 675.
Method of Producing Encystment in Cultures of Endamoeba Histolytica. W. S. Stone, Washington, D. C.—p. 681.
*Bacteria-Free Antigen for Complement Fixation Test in Amebiasis: Preliminary Report of New Method of Preparation. W. S. Stone, Washington, D. C.—p. 685.
Self-Inoculation with Endamoeba Histolytica Trophozoites Through Vaseline and Longevity of Trophozoites in Vaseline. Bertha Kaplan Spector, Chicago.—p. 689.
Blood Studies on Trichuris-Infested and Worm-Free Children in Louisiana. G. F. Otto, Baltimore.—p. 693.

Atabrine and Plasmochin in Treatment of Malaria.—Seckinger gives the effects of atabrine and plasmochin in a highly malarious area, in which a thick blood smear index of school children in six districts showed 80.1 per cent positive for malaria in October 1932. Because of the high incidence of subtertian malaria, 0.01 Gm. of plasmochin was given three times a week throughout the seasons of malaria of 1933 and 1934, and 0.1 Gm. of atabrine three times a day (three tablets) for five days, whenever the monthly blood smears were positive or clinical symptoms developed. Throughout both seasons there was a satisfactory control of gametocyte production, which it is believed was due to plasmochin. Most striking results were obtained in the reduction of malaria infection in the treated area as compared with an untreated adjoining district. This was due to the effect of atabrine. At the end of the 1933 malaria season the rate in the treated area was 10.9 per cent, as compared with a rate of 60.3 in the untreated area. In October 1933, those in the untreated area received full course treatments of atabrine. There was little variation in the rate during the early part of 1934, but as the season advanced there was an increase to 28.8 in the area originally untreated, whereas in the regularly treated area the incidence was only 8.8 at the close of the season in October. Atabrine has been found particularly effective in the sterilization of carriers. Of 186 positive cases before treatment in May and June 1933, only fifteen were positive in October. Of the fifteen cases, only one was positive in July 1934 and five in October. The beneficial effects of both drugs are probably accountable for the lower infection rates among those individuals originally negative in the treated area, as compared with a similar group

in the untreated area. With winter intervening in the temperate zone to aid in malaria prevention, it is believed that the effectiveness of atabrine and plasmochin marks an important advance in the control of malaria in this latitude. The short course of treatment necessary, the effectiveness of atabrine as a schizonticide, and the efficacy of plasmochin as a gametocide have been proved.

Complement Fixation Test in Amebiasis. — Stone describes a method for the preparation of a pure Endamoeba histolytica antigen that is practically bacteria free and seems to be of greater value as a diagnostic aid in amebiasis than those used formerly. The procedures for the collection, separation from starch granules, washing, breaking up and extraction of the cysts are outlined. The antigen appears to be specific in all tests that the author has run up to the present time. It does not give cross fixation with syphilitic or other complement fixing serums. However, the number of cases tested so far is insufficient to determine its true value as a diagnostic agent. The antigen prepared by this method is now being distributed to several of the leading diagnostic centers in which frequent cases of amebiasis are found.

Archives of Otolaryngology, Chicago

22: 537-658 (Nov.) 1935

Relation of Bronchiectasis to Infection of Paranasal Sinuses. G. E. Hodge, Montreal.—p. 537.
*Neoplasms Involving Middle Ear. L. A. Schall, Boston.—p. 548.
*Glossodynia: Reflex Irritation from Mandibular Joint as Principal Etiologic Factor: Study of Ten Cases. J. B. Costen, St. Louis.—p. 554.
Evaluation of Caloric Tests in Localization of Lesions of Posterior Fossa: Study of Forty Verified Cases. J. L. Maybaum and M. Grossman, New York.—p. 565.
Value of Speech Training in Cases of Cleft Palate and Other Oral Conditions. E. E. Scharfe, Montreal.—p. 585.
*New Procedure for Treatment of Web in the Larynx: Report of Case. S. Iglauer, Cincinnati.—p. 597.
Staples and Double-Pointed Tacks as Foreign Bodies: Mechanical Problems of Bronchoscopic Extraction. C. Jackson and C. L. Jackson, Philadelphia.—p. 603.
Effect of Experimental Bilateral Turbinectomy on Development of Testes in Rabbit. P. R. Nemours, St. Louis.—p. 626.

Neoplasms Involving Middle Ear.—Schall asserts that neoplasms of the middle ear are not medical curiosities. The most constant observation, although it may have but a casual relationship, is chronic otorrhea. The symptom most suggestive of neoplasm is the tendency to bleed from the external auditory canal. This bleeding may be of any degree of severity from a blood-tinged discharge to severe hemorrhage after removal of granulations or an aural polyp. Pain may be an early symptom, but usually it does not occur until the growth has attained sufficient size to cause pressure. Facial paralysis occurred early in two cases of a series of fifteen. In the early stage there may be no symptom suggestive of neoplasm except the finding of an "aural polyp" on clinical examination. The removal of this polyp is followed by excessive bleeding. Microscopic examination of the specimen reveals the true diagnosis. This was true in two cases. If every aural polyp were studied microscopically, the early diagnosis of a malignant growth would be made more frequently. In the early stage the roentgenogram may be of no diagnostic value. In a case of hemangio-endothelioma in which the roentgenograms revealed nothing abnormal, extension of the tumor to the deep posterior canal cells was found at operation. Radical mastoidectomy with removal of the entire cutaneous canal followed by irradiation is indicated in every case of malignant growth presenting itself in the external auditory canal beyond the isthmus. That five patients have had no recurrence for from two to more than four years after treatment of neoplasm of the middle ear is proof that the prognosis in the disease is no longer hopeless.

Reflex Irritation from Mandibular Joint as Principal Etiologic Factor in Glossodynia.—During the observation of ninety patients with neuralgia and aural symptoms associated with destruction and disturbed function of the temporomandibular joint, Costen found ten to have burning pain about the tongue and pharynx. One varied the description to a "prickling sensation along the margin of the tongue." Complete relief was obtained in most of the cases after repositioning the lower jaw to increase its vertical dimension and bringing the condyle out of range of the auriculotemporal and chorda tympani nerves. Irritation of these nerves, especially the auriculotemporal, sufficient to produce reflex pains in the remaining branches of the mandibular nerve is proposed as the principal etiologic factor in the production of "burning tongue" or "neurosis of the mouth" without gross lesions.

Treatment of Web in Larynx.—Iglauer applied the principle of the two stage operation sometimes employed by the general surgeon for the treatment of syndactylism in a case of a cicatricial web between the vocal cords. This consists in passing a wire through the proximal portion of the web between the fingers and leaving the wire in place until the epithelium has grown through from both surfaces, forming a new commissure. At the second operation the web between the fingers is completely divided, the epithelium-lined commissure preventing adhesions from reforming.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

16: 641-704 (Nov.) 1935

Selective Heat Production by Ultra Short (Hertzian) Waves. A. Bachem, Chicago.—p. 645.
Treatment of Acne Vulgaris, with Especial Reference to Physical Therapy. E. P. Zeisler, Chicago.—p. 651.
Fundamentals and Indications of Short Wave Therapy, Fulguration and Coagulation. L. H. Stiebock, Vienna, Austria.—p. 657.
Thalassotherapy. C. I. Singer, Long Beach, Long Island, N. Y.—p. 662.
Physical Therapy in Angina Pectoris and Coronary Occlusion. H. D. Holman, Mason City, Iowa.—p. 667.
Control of Pain and Hemorrhage in Electrosurgical Tonsillectomy. L. J. G. Silvers, New York.—p. 671.
Physical Therapy in Allergic Diseases. H. B. Wilmer and M. M. Miller, Philadelphia.—p. 674.
Physical Therapy in Fractures. V. W. M. Wright, Philadelphia.—p. 678.

Delaware State Medical Journal, Wilmington

7: 219-236 (Nov.) 1935

*Specific Antiserum in Treatment of Tularemia: Two Unusual Cases Treated Successfully with Commercial Antiserum. L. B. Flinn, Wilmington.—p. 219.
Relationship of Dental Foci of Infection to Ocular Pathology. S. M. Sosnov, Wilmington.—p. 222.
Repairers of the Living Bellows. E. Podolsky, Brooklyn.—p. 226.

Specific Antiserum in Treatment of Tularemia.—Flinn cites two cases of tularemia treated with the first specific antiserum commercially available. The first patient, aged 21, presenting an ulceroglandular type of tularemia, was treated with 30 cc. of commercial antiserum (horse), beginning on the eighteenth day of the disease, and was well six weeks after the onset. The other patient, aged 58, having a severe tularemic pneumonia, treated with 90 cc. of commercial antiserum (horse), beginning on the fourteenth day of the illness, returned to work within three three months; he had a relapse two months later, which subsided immediately following 30 cc. of goat serum.

Florida Medical Association Journal, Jacksonville

22: 189-238 (Nov.) 1935

The Tonsil Problem. L. C. Ingram, Orlando.—p. 203.
Partial Stomach Resection After Method Advocated and Practiced by Professor Hans Finsterer of Vienna. M. Smith, Miami.—p. 209.
Management of Acute Head Injuries. J. M. Dell Jr., Gainesville.—p. 214.
Hydramnion, Habitual: Case Report. C. D. Hoffmann, Orlando.—p. 215.

Johns Hopkins Hospital Bulletin, Baltimore

57: 247-316 (Nov.) 1935

*Experimental Studies on Pathogenesis of Epituberculosis. Ella Hutzler Oppenheimer, Baltimore.—p. 247.
Studies on Adrenal: X. Experimental Studies on Replacement Therapy in Adrenal Insufficiency. A. Grollman and W. M. Firor, Baltimore.—p. 281.
Acute Staphylococcic Infection of Jejunum and Ileum. S. S. Blackman Jr., Baltimore.—p. 289.
Epidemic Meningococcus Meningitis: Analysis of Twenty-Six Cases, Twenty-One of Which Occurred in the Spring of 1935. W. S. Tillett and T. M. Brown, Baltimore.—p. 297.

Studies on Pathogenesis of Epituberculosis.—Oppenheimer produced experimentally a roentgen lesion, quite like that of so-called epituberculosis or benign resolving pulmonary tuberculosis of childhood, by introducing dead tubercle bacilli into the bronchus of hypersensitive rabbits. This shadow, which

exhibited the form and clinical course of that in human epituberculosis, reached its maximal density in from two to four weeks and then gradually cleared completely; clearing often began at the periphery, as is common in the case of the shadow of epituberculosis. No similar roentgen shadow occurred in nonallergic animals subjected to the same procedure. Immunized, hypersensitive animals injected intratracheally with living tubercle bacilli developed a similar shadow, which, however, spread progressively to a fatal termination. The macroscopic appearance of this epituberculosis-like shadow, studied at different intervals, was that of a tuberculous pneumonia which clears by resolution and organization. After resolution, strands of nonspecific scar tissue may be found at the site. Histologically, the lesion produced is that of a typical tuberculous pneumonia with epithelioid and giant cells, lymphocytes and caseation. Tubercle bacilli or their fragments could be stained as long as the reaction remained. Later, peripheral organization, absorption of the exudate and nonspecific scar formation occurred. The observations demonstrate that the peculiar characteristics of epituberculosis can be reproduced by the discharge of dead bacilli into the lung of an allergic individual by way of a bronchus. The author suggests that characteristic epituberculosis represents in many cases, if not in all, the result of erosion of a bronchus by a caseous lymph node containing relatively few viable bacilli, and that the characteristic shadow represents a tuberculous pneumonia produced by the discharge of caseous material impregnated with tuberculoprotein and dead bacilli, though containing some living bacilli, into the lung of a body sensitized and immunized by the previous infection. The various and clinically familiar shades between the benign retrogressive wedge-shaped area of epituberculosis and the wedge-shaped rapidly progressive area of active tuberculosis may be expected to occur depending on the balance between the number of viable bacilli in the discharging node and the degree of acquired resistance and hypersensitivity of the body.

Journal of Bacteriology, Baltimore

30: 447-546 (Nov.) 1935

Electrophoretic Phenomena of Bacteria: II. Electrophoretic Velocities of Virulent and Nonvirulent Corynebacterium Diphtheriae. C. W. Buggs and R. G. Green, Minneapolis.—p. 447.

Id.: III. Electrophoretic Velocity of Bacteria in Relation to Growth, Senescence and Death. C. W. Buggs and R. G. Green, Minneapolis.—p. 453.

Serologic Variant of Salmonella Aertrycke Isolated from Pigeons. P. R. Edwards, Lexington, Ky.—p. 465.

Influence of Heat and Storage on Electrophoretic Migration Velocities of Various Micro-Organisms. K. P. Dozois and F. Hachtel, Baltimore.—p. 473.

*Comparison of Eijkman Test with Other Tests for Determining Escherichia Coli in Sewage. A. A. Hajna and C. A. Perry, Baltimore.—p. 479.

Studies on Cultural Characteristics of Pasteurella Tularense. Cora M. Downs and G. C. Bond, Lawrence-Kansas City, Kan.—p. 485.

Amylase of Clostridium Acetobutylicum. W. W. Johnston and A. M. Wynne, Toronto.—p. 491.

Action of Radiation in Extreme Ultraviolet on Bacillus Subtilis Spores. I. H. Blank and W. Arnold, Boston.—p. 503.

Inhibition of Growth of Bacillus Subtilis by Ultraviolet Irradiated Carbohydrates. I. H. Blank and W. Arnold, Boston.—p. 507.

Studies on Cultural Requirements of Bacteria: VI. Diphtheria Bacillus. J. H. Mueller, Boston.—p. 513.

Id.: VII. Amino Acid Requirements for Park-Williams Number Eight Strain of Diphtheria. J. H. Mueller and I. Kapnick, Boston.—p. 525.

Biologic Classification of Klebsiella Ozenae. L. A. Julianelle, with technical assistance of W. Smith, St. Louis.—p. 535.

Tests for Determining Escherichia Coli in Sewage.—Hajna and Perry used the Eijkman method in the examination of raw sewage, effluent and sludge. High dilutions of sewage were made to insure that the last two or three dilutions would be negative, a necessary step in order to calculate most probable numbers with accuracy. All cultures were incubated at 37 C. for about twenty-four and forty-eight hours, except the Eijkman tubes, which were incubated at 46 C. Eosin-methylene blue-agar plates were streaked from tubes and after twenty-four and forty-eight hours' incubation one or two typical colonies from each plate were inoculated into citrate, Eijkman and lactose broth for confirmation. Cultures which produced typical colonies on eosin-methylene blue-agar plates and formed gas in lactose and Eijkman broths but which were unable to grow in the citrate medium of Koser (1923) were considered Escherichia coli. In comparing certain mediums that have been proposed as possible substitutes for standard lactose broth with their modified Eijkman medium for relative efficiency in the isolation of Escherichia coli from raw sewage, they found the Eijkman test to be superior to standard lactose broth, buffered lactose broth, Ritter's, Salle's, Dominick-Lauter's, and Stark's and England's broths both in the number of isolations of Escherichia coli made and in the number of gas tubes confirmed for Escherichia coli. The relative efficiency of standard lactose broth and the modified Eijkman broth for the isolation of Escherichia coli from raw sewage, sewage effluent and sludge was tested. Escherichia coli was recovered from more of the tubes of Eijkman broth than of lactose except in the case of sewage sludge. Four and five-tenths per cent more of the lactose broth tubes inoculated with sludge were confirmed for Escherichia coli. A much larger percentage of the Eijkman tubes with gas were confirmed in all instances.

Journal of General Physiology, New York

19: 199-396 (Nov. 20) 1935. Partial Index

Relation Between Litter Size, Birth Weight and Rate of Growth in Mice. W. J. Crozier and E. V. Enzmann, Cambridge, Mass.—p. 249.

Alleged Effect of Electrical Stimulation on Metabolism of Red Cell Suspensions. E. Ponder and J. Macleod, Cold Spring Harbor, Long Island, N. Y.—p. 265.

Acetylation of Tyrosine in Pepsin. R. M. Herriott, Princeton, N. J.—p. 283.

Dark Adaptation of Retinal Fields of Different Size and Location. S. Hecht, C. Haig and G. Wald, New York.—p. 321.

Carotenoids and Visual Cycle. G. Wald, Boston.—p. 351.

Formulation of Serologic Flocculation Rate in Region of Considerable Antibody Excess. S. B. Hooker and W. C. Boyd, Boston.—p. 373.

Immunologic Specificity of Euglobulin and Pseudoglobulin Fractions of Horse and Human Serum. T. Harris and H. Eagle, Philadelphia.—p. 383.

Journal of Nutrition, Philadelphia

10: 461-578 (Nov. 10) 1935

Utilization of Energy Producing Nutriment and Protein as Affected by Individual Nutrient Deficiencies: III. Effects of Plane of Protein Intake. E. B. Forbes, R. W. Swift, A. Black and O. J. Kahlenberg, State College, Pa.—p. 461.

*Pathologic Skin Changes in Tail of Albino Rat on Diet Deficient in Vitamin G. Susan Gower Smith and D. H. Sprunt, Durham, N. C.—p. 481.

Human Iodine Balance. Vera V. Cole and G. M. Curtis, Columbus, Ohio.—p. 493.

Utilization of Inulin for Growth by Young White Rat. Adelaida Bendaña and H. B. Lewis, Ann Arbor, Mich.—p. 507.

Effect of Cereal Diets on Composition of Body Fat of Rat. H. S. Olcott, W. E. Anderson and L. B. Mendel, New Haven, Conn.—p. 517.

Influence of Diet on Glucose Tolerance of Dog. Esther M. Greisheimer and F. W. Hoffbauer, Minneapolis.—p. 525.

Adequacy of Simplified Rations for Complete Life Cycle of Chick. A. G. Hogan, R. V. Boucher and H. L. Kempster, Columbia, Mo.—p. 535.

Effect of One Per Cent Cod Liver Oil on Rat, with Particular Reference to Thyroid Gland. C. B. Freudenberger and F. W. Clausen, Salt Lake City.—p. 549.

Relation of Rate of Growth to Diet: III. Comparison of Stock Rations Used in Breeding Colony at the Connecticut Agricultural Experiment Station. L. B. Mendel and Rebecca B. Hubbell, with assistance of Luva Francis, New Haven, Conn.—p. 557.

Comparative Rachitogenic Property of Oats and Corn. L. L. Lachat and L. S. Palmer, St. Paul.—p. 565.

Changes in Rats on Diet Deficient in Vitamin G.—Smith and Sprunt present evidence to show that an atrophy of the sebaceous glands and thinning of the epithelium together with hyalinization of the connective tissue occurs in the tails of rats subsisting on a diet deficient in the vitamin G complex. This does not occur in rats on the same diet supplemented with autoclaved yeast. After the atrophy has occurred in any vitamin G deficient rat, as demonstrated by biopsy section, there is prompt and complete regeneration on the addition of autoclaved yeast to the diet. The authors cannot say that this characteristic change is specific for vitamin G, as it occurred also to some extent in the rats on vitamin A deficient diets and in the rats on vitamin B deficient diets in their control experiments. They give three possible explanations for the pathologic changes observed: they may be due to chronic inanition, in the case of the vitamin A and vitamin B deficiencies there may be a secondary shortage of vitamin G due to inanition or faulty absorption, and vitamins A, B and G may all be necessary for the protection of the tissues involved. Under these circumstances the pathologic changes described may occur when any one of them is lacking. Experiments are now in progress to test these hypo-

thetical explanations. It is impossible for the authors to state what factor or combination of factors is responsible for maintaining the characteristic structure of the sebaceous glands and epithelium. The fact that abnormal sebaceous secretion has been reported in cases of human pellagra and the results of the present studies lend some support to the idea of vitamin G deficiency.

Journal of Urology, Baltimore

34: 349-498 (Nov.) 1935

*Transuretero-Ureteral Anastomosis: Report of Clinical Case. C. C. Higgins, Cleveland.—p. 349.
Gigantic Hydronephrosis. W. O. Wilder and L. H. Doolittle, Springfield, Mass.—p. 356.
Experimental Study of Bladder Disturbances Analogous to Those of Tabes Dorsalis. J. E. Dees and O. R. Langworthy, Baltimore.—p. 359.
Traumatic Rupture of Urethra: Study of Thirty-Seven Cases. W. R. Delzell and A. R. Stevens, New York.—p. 372.
Primary Carcinoma of Urethra: Report of Case Occurring in Male. A. McNally, Chicago.—p. 384.
Procaine Reaction Following Injection in Traumatized Urethra. E. M. Bingham, Riverside, Calif.—p. 391.
Anesthetic Lubricant for Urethra. R. M. Nesbit and R. K. Ratliff, Ann Arbor, Mich.—p. 394.
Endoscopic Excision of Prostatic Obstruction. C. W. Collings, New York.—p. 396.
Some Observations Following Prostatic Resection. W. R. Hornaday, Des Moines, Iowa.—p. 401.
*Recurrence of Urinary Obstruction Following Transurethral Prostatic Resection. G. J. Thompson, Rochester, Minn.—p. 405.
Uncontrollable Hemorrhage from Benign Prostatic Enlargement: Report of Case. C. H. deT. Shivers, Atlantic City, N. J.—p. 417.
Present Status of Prostatic Resection. R. V. Day, Los Angeles.—p. 428.
Study of Changes in Trigon During Resection: New Cause of Urinary Extravasation and Pelvic Cellulitis. D. F. Rudnick, Chicago.—p. 437.
*New Method for Relief of Hydrocele. G. R. Livermore, Memphis, Tenn.—p. 446.
Abdominoscrotal Hydrocele. R. C. Tanzer, Cooperstown, N. Y.—p. 447.
Consideration of Testicular Prosthesis. J. D. Barney, Boston.—p. 453.
Selective Irradiation in Management of Teratoma Testis. R. S. Ferguson, New York.—p. 458.
Radiation Treatment of Tumors of Testicle. G. G. Smith, R. Dresser and E. R. Mintz, Boston.—p. 462.
Torsion of Spermatic Cord. W. H. Kinney, Philadelphia.—p. 470.
Epididymo-Orchitis in Industrial Surgery. J. J. Crane, Los Angeles.—p. 477.
Advantages of Closed Epididymotomy. M. S. Rohde, New York.—p. 480.
Microcystometer: Portable Instrument for Cystometry and Sphincterometry. I. Simons, New York.—p. 493.

Transuretero-Ureteral Anastomosis.—Higgins presents a case in which transuretero-ureteral anastomosis has been performed, furnishing the first proof that the operation is physiologically successful in man. The problem presented in this case was so unusual that it was hard to decide what surgical procedure should be employed. The patient, a man aged 25, had begun to suffer from frequency, urgency and nocturia about one year before the author's examination. Pain had been present in the region of the right kidney while he was urinating. Four or five months after these symptoms appeared, a cystotomy had been performed by another surgeon. At this operation, several small calculi were removed from the bladder and a large diverticulum which contained stones was found, and this involved the right side of the bladder. The stones were removed but the diverticulum was left intact. The symptoms persisted after operation. Convalescence after anastomosis was performed was uneventful. No urinary leakage occurred and the patient was discharged twelve days after operation. An intravenous urogram after operation showed prompt initial function of both kidneys, which later became a little slower on the left side. The left ureter appeared normal below the pelvis of the kidney. Postoperative observations a year and a half after operation showed both kidneys to be functioning well with no evidence of obstruction at the site of the ureteral anastomosis. At the present time the patient has no symptoms of urinary disturbance. The author concludes that, although such a procedure may seldom be indicated, it is an anatomic and physiologic possibility and adds another conservative technic to the armamentarium of urologic surgery.

Urinary Obstruction Following Transurethral Prostatic Resection.—Thompson points out that, of 1,694 patients subjected to transurethral resection at the Mayo Clinic from January 1913 to January 1935, forty-nine have returned and have again been operated on for the relief of urinary obstruction; sixteen patients suffered originally from carcinoma of the prostate, ten from a median bar formation or contracture of the vesical neck and twenty-three from adenomatous enlargement of the type formerly treated by prostatectomy. The ten patients who suffered from a median bar formation or contracture of the vesical neck belong to the group for which punch operations have been acknowledged to be the operation of choice; symptoms of urinary obstruction recur in a greater proportion of cases of this type than in cases in which there is adenomatous enlargement of the prostate. The twenty-three patients with adenomatous hyperplasia probably all had a certain amount of regrowth of prostatic tissue, although six of them said that they had never been completely relieved by the first operation; in five other cases, definite new growths could be recognized by cystoscopy. In every case in which there was a recurrence, the stay in the hospital following the second operation was shorter than it was after the primary operation was performed; without exception a smooth convalescence occurred. Recurrent urinary obstruction following transurethral resection will be infrequent if the primary operation is thorough; if a good functional result is not immediately obtained, it is best to remove more tissue without delay. Greater deformity of the prostatic urethra results from suprapubic or perineal prostatectomy than from prostatic resection; recurrent intra-urethral proliferation of adenomatous tissue is little if any greater after transurethral resection than after prostatectomy. The percentage of cases in which urinary obstruction has recurred after transurethral resection is much less than has been predicted.

Method for Relief of Hydrocele.—Livermore's method is performed as follows: The hydrocele is aspirated with a large gallbladder trocar. After the fluid has been evacuated, narrow shoestring tape is saturated with a solution of sodium morrhuate (prepared as for injecting varicose veins) and packed loosely through the cannula into the hydrocele sac, care being exercised to insert the tape throughout the length and breadth of the cavity. A gauze dressing and a suspensory bandage are then applied. The tape is not disturbed for twenty-four hours, when about 2 inches is removed and cut off. Each day thereafter from one-half to 1 inch (depending on the length of tape inserted) is removed and cut off till the seventh day, when it is removed entirely. The success of this method depends on the care with which the tape is inserted, its thorough saturation with the solution and its intermittent daily removal. A local anesthetic and a small skin incision make it practically a painless procedure and there is little complaint at the fractional removal of the tape.

New England Journal of Medicine, Boston

213: 1005-1056 (Nov. 21) 1935

Torsion of Appendix Testis (Hydatid of Morgagni): Report of Two Cases. J. S. Rhodes, Boston.—p. 1005.
*Experimental and Clinical Observations on Urinary Calculi. C. C. Higgins, Cleveland.—p. 1007.
Review of Variety of Poisons Which Have Caused Death in the Massachusetts State Hospitals for Mental Disease. Anna M. Allen, Boston.—p. 1013.
Clinical Lecture on Migraine. A. H. Gordon, Boston.—p. 1017.
*Systolic Gallop Rhythm: Clinical Study. W. P. Thompson and S. A. Levine, Boston.—p. 1021.
Theelin Therapy in Vulvovaginitis. R. B. Phillips, Boston.—p. 1026.

213: 1057-1108 (Nov. 28) 1935

Some Obstetric Aspects of Cardiac Disease Complicated by Pregnancy. H. B. Nelson and M. F. Eades, Boston.—p. 1057.
Whooping Cough and Its Prevention. L. Sauer, Evanston, Ill.—p. 1061.
Modified Technic for Stereoscopic Examination of Skull by X-Ray. Z. W. Colson, Lawrence, Mass.—p. 1067.
Progress in Tuberculosis 1934-1935. J. B. Hawes 2d and M. J. Stone, Boston.—p. 1087.

Urinary Calculi.—Higgins observed twenty-three cases in which stones that were too large to pass spontaneously from the kidney have undergone complete solution as indicated by radiographic studies and by pyelography. Seventeen patients passed calculi at frequent intervals. After the high vitamin A acid-ash diet had been followed, all have been entirely free from symptoms for more than two years. During the last two and a half years, the author has had only one instance of recurrent stone formation following operative removal of stones from the

upper urinary tract; the patient did not follow the routine that was outlined for him. The high vitamin A acid-ash diet is prescribed in addition to the other therapeutic measures that he has always used, such as eradication of infection and elimination of stasis. Since this regimen has been used the incidence of recurrent stone formation has been reduced from 16.4 to 4.7 per cent in his cases. He has also observed cases in which the stones have diminished in size, but insufficient time has elapsed to warrant their complete solution. In other cases he has been unable as yet to note any decrease in the size of the calculi although the patients have followed the diet for a period of from four to five months. It is impossible to determine whether a noticeable decrease in the size of the stones will occur after the diet has been followed for longer periods. He believes, however, that conservative treatment should be attempted if the stone is not producing definite renal damage and the patient is not disabled by pain. He is certain that, if in addition to the other therapeutic measures which have been used previously a carefully planned diet is prescribed to which vitamin A is added postoperatively, the recurrent formation of stones can be reduced to a minimum.

Systolic Gallop Rhythm. — Thompson and Levine saw thirty-five patients with systolic gallop rhythm over a period of eleven years, representing 16 per cent of all patients with gallop rhythm encountered during this period. In most cases the extra sound in systolic gallop rhythm has a quality resembling the normal first sound. Its maximal intensity is usually in the region of the apex of the heart. Its intensity is variable in different patients and occasionally in the same patient from time to time. It may alter its intensity or even disappear with a change in the position assumed by the patient, although generally it is loudest in the recumbent position. It may also appear or disappear without apparent cause. Four of the group had no cardiovascular disease, five had coronary artery disease, two of these and six others had arterial hypertension, usually mild in degree, and one had bundle-branch block without other evidence of cardiovascular disease. Only two patients had cardiac enlargement. Significant electrocardiographic abnormalities were absent except in four of those with coronary disease and the one with bundle-branch block. No real incapacitation was present except in those with coronary artery disease. The extremes of age were 11 and 71 years. Males were predominant in the group with cardiovascular disease, while there was no difference in those without it. None of the patients having cardiovascular disease are dead, while 46 per cent with diastolic gallop observed over the same period are dead. The rarity of cardiac enlargement and physical incapacitation, the slight degree of arterial hypertension in those who had it and the complete absence of congestive signs all point to the benignity of systolic gallop rhythm. Systolic gallop rhythm occurred predominantly in "nervous" people.

New York State Journal of Medicine, New York

35: 1123-1182 (Nov. 15) 1935

Campaign to Reduce Death Rate of Pneumonia in New York State. R. L. Cecil, New York.—p. 1123.
Raynaud's Disease: Hypothesis as to Its Cause. A. F. Kraetzer, New York.—p. 1130.
Cancer of the Breast. J. J. Morton and S. J. Stabins, Rochester. —p. 1137.
Acoustic Neurinomas in Stage of Normal Intracranial Pressure: Analysis of Thirteen Early and Late Cases. W. B. Hamby, Buffalo. —p. 1143.
Modified Mikulicz Operation as Opposed to One-Stage Procedure for Carcinoma of Colon. C. V. Burt, New York.—p. 1148.
Prognosis of Cancer of Cervix Treated by Irradiation. N. B. Sackett, New York.—p. 1153.
Cigaret Smoke as Health Hazard. H. Sharlit, New York.—p. 1159.

Public Health Reports, Washington, D. C.

50: 1569-1606 (Nov. 8) 1935

Rat Leprosy: Observations Concerning Transmission of Infection Through the Nose. N. E. Wayson and E. Masunaga.—p. 1576.
Studies of Sewage Purification: III. Clarification of Sewage: Review. E. J. Theriault.—p. 1581.

50: 1607-1638 (Nov. 15) 1935

Sickness Among Male Industrial Employees During Second Quarter and First Half of 1935. D. K. Brundage.—p. 1607.
Physical Condition and Unemployment. H. S. Diehl.—p. 1610.
Microscopic Appearance of Experimentally Produced Dust Nodules in Peritoneum. J. W. Miller and R. R. Sayers.—p. 1619.

Rhode Island Medical Journal, Providence

18: 161-178 (Nov.) 1935

Some Clinical Aspects of Deficiency Diseases in Adults. C. S. Keefer, Boston.—p. 161.
The New Deal in Medicine. M. W. Thewlis, Wakefield.—p. 165.
The Doctor as a Health Educator. W. W. Bauer, Chicago.—p. 168.

Science, New York

82: 469-498 (Nov. 22) 1935

Harvard in Medical Education. W. A. Jessup, New York.—p. 469.
Development of Clinical Subjects as Contributing to University Work. E. J. Du Bois, New York.—p. 472.
Relation of Medicine to Fundamental Sciences. L. J. Henderson, Boston.—p. 477.
Protection from Mosquito Bites in Outdoor Gatherings. J. M. Ginsburg, New York.—p. 490.
*Further Evidence for Presence of Toxic Factor in Pernicious Anemia. G. E. Wakerlin and H. D. Bruner, Louisville, Ky.—p. 494.
*Some Observations on Ultraviolet Irradiated Amebas. W. A. Black, Berkeley-San Francisco.—p. 495.
Contribution to Pharmacology of Physostigmine. C. R. Linegar, J. M. Dille and T. Koppanyi, Washington, D. C.—p. 497.

Toxic Factor in Pernicious Anemia. — Wakerlin and Bruner examined the urines of two treated pernicious anemia patients and have found the toxic, reticulocyte decreasing substance absent. The concentration of the reticulocyte stimulating principle in these two urines was definitely decreased. Urine from untreated patients with pernicious anemia contains both a thermolabile, comparatively toxic, reticulocyte decreasing factor and a partially thermostable, relatively nontoxic, reticulocyte stimulating principle for the pigeon. Normal human urine contains the latter but not the former, or at least not in the quantities of urine used. What relation the urinary reticulocyte decreasing principle bears to the toxic substances reported by Macht, Mermod and Dock, and Kingisepp as present in the plasma of untreated pernicious anemia patients is largely speculative at present. If the authors' impression that the principle acts through depressing erythrogenesis in the bone marrow should prove to be correct, the production of experimental pernicious anemia in mammals by the separation and administration of sufficient quantities of the reticulocyte decreasing factor is not beyond the realm of possibility.

Observations on Ultraviolet Irradiated Amebas.—Preliminary to a study of the manner in which various solutions of sodium chloride modify the action of ultraviolet radiation on protoplasm, Black did a number of exploratory experiments on Amoeba proteus. His observations on irradiated amebas indicate that digestion of food is stopped by ultraviolet rays and that cessation occurs with the appearance of morphologic symptoms of impairment. Amoeba proteus shows negative phototropism toward ultraviolet radiation. The cell membrane of irradiated amebas is relatively inextensible.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

43: 597-660 (Nov.) 1935

Mucocele of Appendix as Complication of Pelvic Pathology. T. F. Bell, Oakland, Calif.—p. 597.
Renal Dystopia. H. A. R. Kreutzmann, San Francisco.—p. 605.
Treatment of Carbuncles of Face. H. P. Totten, Los Angeles.—p. 609.
Resection of Mobile Portions of Colon by Mikulicz Method: Report of Five Successful Cases. A. H. Noehren, Buffalo.—p. 618.
*Calcinosis Universalis. E. G. Ramsdell, White Plains, N. Y.—p. 624.
Thyroid and Liver. C. H. Frazier and R. B. Brown, Philadelphia.—p. 636.
Prevention and Treatment of Goiter: Address to the Public and the Profession. R. M. Wilder, Rochester, Minn.—p. 647.

Universal Calcinosis.—Ramsdell discusses a case of universal calcinosis in a girl, aged 10, in which improvement of the vasospasm and the absorption and melting of the calcium deposits began almost immediately following a unilateral thyroidectomy and attempted parathyroidectomy. The patient presented a long febrile course associated with marked loss of weight, scleroderma, the deposit of enormous amounts of calcium in the subcutaneous tissues of the body, and marked vasospasm of the peripheral vascular system suggesting a Raynaud's type with normal blood calcium and blood phosphorus. At operation hyperplasia of the thyroid was observed, but no demonstrable pathologic changes of the parathyroid were found. Universal calcinosis, scleroderma and Raynaud's disease are related to a similar constitutional anomaly based on peculiar but little understood changes in the calcium metabolism. Some disturbance in the function of the thyroid and parathyroid is probably the underlying cause.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

47: 441-496 (Nov.) 1935

*Occupational Argyria. J. M. Harker and D. Hunter.—p. 441.
Angioma Serpiginosum. H. Montgomery and R. J. Bailey.—p. 456.
Posttraumatic Angioma. F. Földvári.—p. 463.

Occupational Argyria.—Harker and Hunter discuss sixteen cases of occupational argyria, seven generalized and nine localized. Six of the workers showing the generalized condition had been employed for years in the manufacture of silver nitrate. The seventh case was a maker of Christmas crackers. The processes that were responsible for their disfigurement are now obsolete and have been replaced by methods of manufacture little likely to give rise to further cases. The nine patients with the localized condition were silversmiths. Only four of the sixteen patients sought advice at the hospital. The other twelve were examined during visits to a firm of bullion refiners and to a firm of manufacturing silversmiths. Only in the case of the Christmas cracker maker was advice sought as to the cause of the discoloration of the skin. Two of the patients were admitted to the wards for investigation of conditions other than argyria. Each of these was a silver nitrate maker showing generalized argyria, and each died of a condition unrelated to the occupation followed. Full postmortem examinations were carried out. Occupations involving the risk of argyria can be divided into two groups. In the first group the workman handles a compound of silver, either the nitrate, the fulminate or the cyanide. These substances give rise to generalized argyria from inhalation and ingestion of the silver salt concerned. Such occupations include the manufacture of silver nitrate, the wrapping of lunar caustic pencils, Christmas cracker making, the silvering of glass beads, mirror plating, electro plating and photography. Owing to altered conditions in these industries, the risk of argyria has now practically disappeared. In the second group the workman handles metallic silver, small particles of which accidentally penetrate the exposed surface of the skin, giving rise to local argyria by a process equivalent to tattooing. Generalized argyria has been recorded in silversmiths, but it is rare. The occupations responsible are the filing, drilling, hammering, turning, engraving, polishing, forging, soldering and smelting of silver.

British Medical Journal, London

2: 885-932 (Nov. 9) 1935

Obesity: Etiology and Metabolism. C. G. Lambie.—p. 885.
Treatment of Mammary Cancer. H. M. Moran.—p. 889.
Strain of School Life on Girls During Early Menstrual Period. D. J. G. Johnston.—p. 892.
Treatment of Boils and Carbuncles: Note. P. K. Fraser.—p. 894.
Primary Axillary Vein Thrombosis. A. D. Belilios and A. W. J. Houghton.—p. 895.
Use of Alum Precipitated Toxoid in Diphtheria Immunization. J. E. Haine.—p. 896.
Prevention of Diphtheria by "One-Shot" Method Using Alum Precipitated Toxoid. M. Naughten, J. H. White and A. Foley.—p. 898.

2: 933-982 (Nov. 16) 1935

Glaucoma, with Especial Reference to Medical Aspects and Early Diagnosis. H. M. Traquair.—p. 933.
*Oil-Soluble Anesthetics in Rectal Surgery. C. N. Morgan.—p. 938.
Differential Diagnosis and Treatment of Severe Anemia. J. C. Matthews.—p. 943.
Hypoglycemia in the Neuroses. M. S. Jones.—p. 945.
Incidence of Erysipelas. J. Riddell.—p. 946.
Biliary Peritonitis. S. Power.—p. 948.

Oil-Soluble Anesthetics in Rectal Surgery.—Morgan has found a 1.5 per cent base of procaine hydrochloride, 6 per cent butyl-para-aminobenzoate and 5 per cent benzyl alcohol in sterilized almond oil to be the best for the treatment of painful conditions in and around the anus. This solution owes its painlessness on injection to the adequate concentration of the procaine base and to the elimination of ether. Its prolonged anesthetic property is due partly to the slow rate of diffusion from the oil and partly to the prolonged action of the butyl-para-aminobenzoate. If the solution is sufficiently warmed and injected slowly, anesthesia is almost immediate. Anesthesia or hypo-esthesia is produced for periods varying from seven to twenty-eight days or longer. Relaxation of the anal musculature is much greater and more prolonged. The preparation is comparatively nontoxic; from 20 to 30 cc. may be injected without any general ill effect. In 100 cases there has been little or no pain on injection when it has been carried out slowly and carefully, and no severe after-pain has been encountered. Relaxation lasted from five to sixteen days. The length of the anesthesia and relaxation was proportional to the amount injected. There was no delay in healing of the wounds. In no case was there any severe reaction in the tissue, and no general toxic effects occurred.

Medical Journal of Australia, Sydney

2: 569-610 (Oct. 26) 1935

Some Clinical Observations on Blood Pressure and Their Practical Application, with Especial Reference to Variation of Blood Pressure Readings in Two Arms. R. Southby.—p. 569.
*Torulosis: Report of Case of Meningitis Due to Torula Histolytica. W. C. Sawers and E. F. Thomson.—p. 581.

Meningitis Due to Torula Histolytica.—Sawers and Thomson report a case of meningitis caused by Torula histolytica. The diagnosis is necessarily a laboratory function and, unless the possibility of such infection is borne in mind, the microscopic appearances of preparations from the cerebrospinal fluid may be overlooked and the presence of yeastlike colonies on cultivation may be attributed to contamination. The attempts at monkey inoculation were successful only by rather gross intracerebral injection, but the pathologic appearances obtained by this means corresponded closely with the description of human lesions. Clinically the recognized cases of torula infection usually involve the central nervous system, and the presence of meningitis most frequently calls attention to the condition. The consensus is that infection occurs through the air passages and lungs, with further spread by the blood stream and the lymphatics. In support of this there are records of torula being found in the lungs of several patients. In many other cases there was associated pulmonary disease, tuberculosis being found in six cases and terminal pneumonia being present in four. It may be that such pulmonary disease predisposes to torula infection by way of the pulmonary system. Other possible portals of entry must be considered: the esophagus, tongue, pharynx and tonsil. In three cases discussed by Fitchett and Weidman the association of Hodgkin's disease with torulosis has been observed. They demonstrated the presence of yeast organisms in enlarged lymph nodes from the head of the pancreas by animal inoculation. They bring forward the possibility of the intestine as a portal of entry. Johns and Attaway mention a case in which trauma over the scapula was followed by a deep mycotic infection, which healed many months before the onset of the typical meningitis. In their own case the initial lesion proved to be a small superficial granuloma that developed from a razor cut. Without careful examination the pathologic appearances may easily be mistaken for tuberculosis, and it is more than possible that many cases have been diagnosed as such.

South African Medical Journal, Cape Town

9: 697-736 (Oct. 26) 1935

Degeneration and Its Remedy. A. Jurriaanse.—p. 704.
Facts and Figures About South Africa's White Population. A. Pijper.—p. 713.
Housing Conditions. T. S. Higgins.—p. 714.

Japanese Journal of Gastroenterology, Kyoto

7: 115-178 (Oct.) 1935

Influences of Amino Acids, and Choline on Pigment-Excreting Function of Liver. T. Matsuura and A. Kashimura.—p. 115.
Experimental Study on Formation of Gallstone: Report I. Influences of Fat-Soluble Vitamins, Especially Vitamin A (Cod Liver Oil and "Biosterin") on Amounts of Potassium, Sodium, Calcium and Magnesium in the Blood. T. Maruno.—p. 120.
Studies on Invertase: Report I. New Modified Method for Isolation and Purification of Invertase. T. Kôzaki.—p. 125.
Id.: Report II. Thermal Analysis of Invertase Action: (1) General Treatise and Determination of Reaction Heat. T. Kôzaki.—p. 135.
Id.: Report III. Id.: (2) Enzyme Amount and Reaction Velocity. T. Kôzaki.—p. 148.
Id.: Report IV. Id.: (3) Sucrose Concentration and Reaction Velocity. T. Kôzaki.—p. 154.
Id.: Report V. Id.: (4) Hydrogen Ion Concentration and Reaction Velocity. T. Kôzaki.—p. 162.
Id.: Report VI. Id.: (5) Temperature and Reaction Velocity. T. Kôzaki.—p. 167.
Id.: Report VII. Theoretical Consideration of Invertase Action. T. Kôzaki.—p. 173.

Archives de Médecine des Enfants, Paris

38: 645-708 (Nov.) 1935

Anorexia of Nursling. P. Lereboullet.—p. 645.
*Urinary Syndrome and Renal Function in Hematuric Nephritis of Children. P. Nobécourt and S.-B. Briskas.—p. 660.
Treatment of Diphtheria. I. H. Alantar.—p. 676.

Hematuric Nephritis of Children. — Nobécourt and Briskas studied twenty-six children (nineteen boys and seven girls) ranging in age from 5 to 13, who developed hematuric nephritis. The origin was rhinopharyngeal in nineteen (73 per cent), and in the remaining it was due to impetigo in two cases and paratyphoid infection in one; it followed antidiphtheritic serum in one and was undetermined in three. The disorder was characterized clinically by rapid onset, sometimes during the angina, sometimes ten days or two weeks later. Fever was usually marked but generally was lowered again after three or four days. In most of the cases the child was pale and fatigued. Headache, vomiting and diarrhea occurred sometimes. In general, the urine was diminished, colored, more or less reddened and cloudy. The urinary syndrome was complete at the onset and lasted only a few days or weeks. Edema was not frequent. Uremia was usual but transitory. The blood cholesterol and total lipoids were usually increased at the onset and became normal on recovery. There was no relation between the blood cholesterol and blood urea. The prognosis of these nephritides is generally favorable. Almost all the patients recover in some weeks or months.

Presse Médicale, Paris

43: 1769-1792 (Nov. 13) 1935

*Granulotherapy. A. Lumière.—p. 1769.
Study of Laboratory Rabies. P. Remlinger.—p. 1772.
Application of Collapse Therapy and Aurotherapy to Pulmonary Tuberculosis. M. Blanchard.—p. 1775.

Granulotherapy.—Lumière discusses the mode of action of carbon in infectious processes. He believes that intravenous injection of carbon produces a hyperleukocytosis which corresponds approximately to double the original number. This leukocytosis is established a few hours after the injection and reaches its maximum from about six to ten hours after administration and usually ceases after twenty-four hours. Daily injections of small quantities give approximately the same results as large doses. Finally it seems that the hyperleukocytosis lasts somewhat longer when preparations of finely divided carbons are used. The most interesting feature of histologic examination of tissues when this procedure has been carried out is that the fixation of carbon particles seems to be final. Three months after their introduction they are found disseminated in the organs just as much as on the day after their injection. He points out that, since carbon has no reaction except in a mechanical way, other substances ought to behave similarly if their physical form is analogous. For other combinations, possibly therapeutic agents, he proposes the name of granulotherapy.

Revue Française de Pédiatrie, Paris

11: 545-663 (No. 5) 1935

Purulent Pleurisies in Children: One Thousand Four Hundred and Fifty Cases. M. Michalowicz.—p. 545.
Mental Future of Children with Sydenham's Chorea. E. Lesné, C. Launay and P. Guillain.—p. 583.
Results of Vacations and Recreation Cures of Children. E. Schlesinger. —p. 593.
Treatment of Infantile Bronchopneumonia by Blood Transfusions. C. Cohen, E. Schellinck and L. Maryssael.—p. 603.
Study of Hemotherapy in Pediatric Practice. M. Schachter.—p. 611.
*Clinical Value of Albuminuria and Cylindruria in Digestive Disorders of Nurslings. P. Rohmer and B. Tassovatz.—p. 617.
*Bilirubinemia in Cerebrospinal Meningitis. E. E. Katzmann and E. P. Gamaley.—p. 630.
Treatment of Acute Disorders of Nutrition by Diet of Raw Apples: Moro-Heisler Method. N. A. Zuckermann.—p. 637.
Dextrose in Treatment of Toxic Processes in Children. P. Eivin and E. Jolkwer.—p. 643.

Albuminuria and Cylindruria in Digestive Disorders.—Rohmer and Tassovatz studied the relations between the degree of renal damage as measured by the albuminuria and cylindruria and the course of acute or subacute digestive disturbances of nurslings. As a preliminary they made systematic examinations of thirty patients with acute or subacute nondigestive infections. From this they concluded that febrile albuminuria is generally slight and that there are relatively few casts. Often signs of organic nephritis are found, especially abundant albumin and red or white blood cells. The renal symptoms are not influenced by liquid diet. In the digestive disturbances the albuminuria and cylindruria develop parallel to the intensity of the diarrhea, and the cylindruria predominates over the albuminuria. They conclude that study of these symptoms, especially cylindruria, is of some interest in the diagnosis, prognosis and conduct of treatment since they so closely reflect the gravity of the case. The urinary syndrome depends to some extent on the age of the patient, being encountered most frequently in the premature and in infants less than 5 months of age. The persistence and reappearance of the urinary signs indicate that the dietetic treatment is ineffective or poorly conducted or that the causative agent is still operative.

Bilirubinemia in Cerebrospinal Meningitis.—Katzmann and Gamaley made 101 qualitative and ninety-four quantitative bilirubin determinations on seventy-two patients with cerebrospinal meningitis. The blood was drawn at the beginning, the middle and the end of the disease. In the majority of cases an indirect reaction of variable intensity was observed. In twelve, however, it was not obtained. The direct reaction was found in four cases with general toxic conditions and hypertrophied livers. The quantitative estimation in the cerebrospinal fluid in severe cases with pleocytosis never exceeded 1.6 mg. per hundred cubic centimeters. As the condition improved it rose to 6.25 mg. This concentration, they believe, is explained by a state of functional inhibition of the reticulo-endothelial system in the production of bilirubin.

Schweizerische medizinische Wochenschrift, Basel

65: 1109-1132 (Nov. 23) 1935

Dependence of Vitamin and Hormone Requirements on Certain Conditions. E. Abderhalden.—p. 1109.
Clinical and Physiologic Results of Cerebral Angiography. E. Moniz.—p. 1112.
Rôle of Experimental Studies in Problem of Tumors. M. Askanazy. —p. 1116.
*Reposition of Incarcerated Meniscus. J. Poult.—p. 1120.
Menopausal Syndrome: Its Pathogenesis and Therapy. E. W. Winter. —p. 1121.
Relations Between Refraction of Eyes and Development of Brain. E. Braun.—p. 1124.

Reposition of Incarcerated Meniscus.—Poult points out that the injury referred to as luxation of the meniscus develops as the result of a tear at the site of insertion or as the result of a rupture of one of the two semilunar cartilages in the knee joint. The injury usually involves the internal cartilage. A luxation takes place when the half or completely detached portion becomes diverted from its normal position; an incarceration takes place if the dislocated portion becomes wedged between the articular surfaces of the condyles. In the latter condition the patient notices that he is unable to stretch or bend his knee. Incarceration of the meniscus is characterized by fixation in semiflexion. The reposition in these cases differs from that of other luxations in that the meniscus is inaccessible to mechanical measures, such as traction, pressure, turning or leverage. In many cases the patient himself is able to overcome the incarceration by swinging or dangling the member. In apparently mild cases it is therefore advisable to let the patient himself try the reposition. The patient is told to sit on the edge of a solid table, to grasp his thigh near the knee with both hands and to swing and dangle the member while all the muscles of the leg are completely relaxed. If the patient does not succeed, the physician must help. It is necessary to watch at what angle the knee is fixed and what rotation position it assumes. This position must be the least incarcerating and therefore the most advantageous for the reposition. The patient is placed on a low bed and is told to relax all muscles. The physician takes the leg under his arm, grasps the leg near the knee, flexes the thigh at the hip joint to the vertical position, lifts the thigh and pelvis from the bed while preserving the favorable angle position of the knee, and dangles the thigh and pelvis downward without giving the knee too much free movement and without interfering with the slight outward rotation of the leg. The success of the reposition is

indicated by the fact that the injured knee can again be flexed and stretched. Occasionally this is accomplished at once; however, in most instances the reposition takes place gradually. The exertion of great force should be avoided, for the continuation of the dangling movements will usually have the desired effect. After reposition has taken place, rotation should be avoided for a while, because it may lead to renewed incarceration. It may be advisable to put on an extension splint for a few days.

Policlinico, Rome

42: 2255-2298 (Nov. 18) 1935. Practical Index

*Intra-Arterial Injections in Diseases of the Limbs. V. Luccarelli.—p. 2255.
Perforations in Typhoid. S. Franco.—p. 2264.

Intra-Arterial Injections in Diseases of Limbs.—Luccarelli treated ten patients suffering from acute and chronic inflammations of the limbs with intra-arterial injections of a solution of 1 Gm. of gentian violet, 10 Gm. of phenol and 100 Gm. of water. Phlegmons, paronychia and bone fistulas that usually require surgical intervention were successfully treated by these injections. The treatment had a beneficial and rapid effect on pain, fever and inflammatory and septic processes. The technic consists in steadying the brachial artery in the anterior and internal region of the fold of the elbow or the femoral artery in the fold of the groin with the index and medius fingers of the left hand and injecting the solution in the direction of the arterial current or against it, holding the needle parallel with the vessel. Care is taken not to lacerate the artery, perforate it on the opposite side or wound the endothelium. The injection is administered slowly. The average dosage of the gentian violet solution is 5 cc. for the arm and 10 cc. for the leg. This amount may be increased, depending on the extent and nature of the infection. The author states that injections may be given at the pulse, in the radial artery and in the upper part of the brachial artery, according to convenience. Thrombosis is the only contraindication to the treatment. Following the injection, the limb acquires a bluish appearance, which disappears in several hours but is not always evident, depending on the congestive state and the altered circulation. When the coloration is evident, it shows that the liquid was really introduced in the artery.

Semana Médica, Buenos Aires

42: 1349-1424 (Nov. 7) 1935. Partial Index

Technic of Local Anesthesia for Total Removal of Parotid Gland. R. Finochietto and G. H. Dickmann.—p. 1349.
*Neuralgia of Nasal Branch of Trigeminal Nerve Due to Tuberculous Toxemia: Case. C. Charlin C.—p. 1352.
Functional Examination of Kidney: Technic for Determination of Function. M. E. Varela.—p. 1360.
Treatment of Recent Fractures of Lower Maxilla. T. Gioia.—p. 1370.
Surgical Treatment of Endarteritis Obliterans of the Limbs: Experiments. A. S. Introzzi and A. Gazcón.—p. 1382.
*Auto-Urotherapy and Urine Proteose (Oriel's P Substance) in Treatment of Anaphylactic Diseases. J. Favelukes.—p. 1410.

Neuralgia of Nasal Branch of Trigeminal Nerve.—Charlin reports two cases of neuralgia of the nasal branch of the trigeminal nerve caused by tuberculous toxemia in which recovery was obtained immediately and permanently by the Mantoux test made with a diagnostic aim. The test gave intense positive results in both cases—the hyperemia and infiltration lasting about one week. The general condition of the patients improved on disappearance of the pain and the ocular and nasal symptoms. Both patients were adults with latent forms of tuberculosis of the thoracic ganglions, and the author says that, since there are no symptoms of this form of the disease in adults, the Mantoux test is advisable in cases of uncontrollable neuralgia of the trigeminal nerve resembling essential trigeminal neuralgia before one resorts to alcoholic injections or operation. He believes that the satisfactory results of the tuberculin injection are due to the formation of antibodies in the patient when reaction takes place.

Anaphylactic Diseases.—Favelukes advises auto-urotherapy, according to Oriel's modified technic, in the treatment of diseases caused by anaphylactic or allergic conditions. Oriel reported that he had extracted from the urine of such persons a proteose of specific antigenic properties (*Lancet* **2:**231 [Aug. 2] 1930; abstr. THE JOURNAL, Sept. 29, 1930, p. 897). The urinary proteose, which was named substance P by its discoverer, is a precipitate of the urine, soluble in distilled water. Its intradermal and subcutaneous injections in high dilutions are of diagnostic and therapeutic value. A positive reaction to the first injection, which is manifested by the development of local and general symptoms, points out the anaphylactic nature of the disease, and the following injections cause specific desensitization of the patient. The first three injections are given intradermally in doses of 0.05, 0.1 and 0.15 cc. of the solution (the concentration of which varies from 1 per cent to 1 per million, according to the type of the disease and the sensitivity of the patient). The interval between the injections varies according to the intensity of the general reaction, reinjection being indicated by the abatement of the reaction. The following injections are given subcutaneously in doses of from 0.1 to 1 cc. or more and increased in the amount of 0.1 cc. per injection. Neither the intravenous nor the intramuscular route can be used for giving the injections. Generally recovery is obtained after the first six injections. The treatment, however, can be prolonged to ten or twelve injections if necessary and may be repeated in cases of recurrence of the allergic or anaphylactic crises. In order to avoid the development of violent reactions, which were frequently observed after the injections of the urinary proteose prepared according to Oriel's technic, the latter was modified by Thiers (*Compt. rend. Soc. de biol.* **117:**940, 1934; *Semana médica* **42:**1412 [Nov. 7] 1935). The author states that the results of Oriel's modified technic are more precise than those of the original technic and reports satisfactory results in six cases of several diseases of an anaphylactic and allergic nature. The diseases treated included dyspnea due to inflammation of the nose and bronchi in some cases and of the alveoli of the bronchioles in other cases, asthma, and various forms of urticaria.

Deutsche medizinische Wochenschrift, Leipzig

61: 1871-1910 (Nov. 22) 1935. Partial Index

Experiences with Schick Reaction After Active Diphtheria Immunization. M. Gundel and J. Wüstenberg.—p. 1871.
Technic of Bronchography. G. Anton.—p. 1875.
Deformity of Internal Genitalia and Tubal Pregnancy. H. Markus.—p. 1876.
*Mucoid Form of Bacterial Growth as Cause of Disease: Bacterium Pyocyaneum-Mucosum in Pyelonephrosis. P. Dahr and H. Kolb.—p. 1879.
Wilson's Hereditary Transmission (Sex-Linked Heredity) in Human Subjects. H. Günther.—p. 1881.

Mucoid Form of Bacterium Pyocyaneum in Pyelonephritis.—Dahr and Kolb point out that the pyocyaneus bacilli (also designated as genus Pseudomonas) are widely distributed, occurring in the intestine as well as on the skin of human subjects. They are found in wounds with mixed infections, but also in pure culture. The authors discuss the variants and mutations of the pyocyaneus bacillus, paying especial attention to a mucoid form, which they consider rare. They show that the capsule formation and the consequent mucoid growth of a bacillus is a manifestation of mutation that is occasionally produced artificially by the addition of chemical substances to a culture. In this connection they call attention to the club formation on typhoid and paratyphoid B bacteria by rhamnose and raffinose. Bacteriophages are another important factor in the development of bacterial mutations. d'Herelle has obtained mucoid growth under the influence of bacteriophages, and he considered the capsule formation a protective measure of the micro-organism. The authors think that the occurrence of mucoid variants of bacteria in the human organism may likewise be induced by bacteriophages or defense substances. Mucoid forms of paratyphoid B bacteria, for instance, have been repeatedly observed in carriers, and in many of these cases the pertaining bacteriophage could be demonstrated. A mucoid form of the pyocyaneus bacillus was first detected in a human subject by Sonnenschein in 1927. However, in 1896 Pottien reported a case in which a "Bacillus fluorescens-capsulatus" was detected and which may have been a mucoid variant of the pyocyaneus bacillus. These two reports seem to be the only ones outside the case observed by the authors. Their patient was a man, aged 61, who had a pyonephrosis in which the mucoid form of the pyocyaneus bacillus was obtained in pure

culture. Following a report of the history of the patient, they describe bacteriologic studies which revealed that the Bacterium pyocyaneum-mucosum detected in this case differs from the one described by Sonnenschein only in its behavior on culture mediums that contain tellurium. To be sure, his tellurium culture medium differed somewhat from that used by the authors, which contained copper sulfate. The authors think that the micro-organism observed by Pottien was likewise a variant of the pyocyaneus bacillus.

Jahrbuch für Kinderheilkunde, Berlin

145: 237-344 (Nov.) 1935

Clinical Results of Calmette's Vaccination. B. Epstein.—p. 237.
*Fatty Degeneration by Excess of Cholesterol Ester in Case of Acute Yellow Atrophy of Liver Caused by Typhoid. H. Beumer.—p. 265.
Nuclear Icterus (Orth-Schmorl) With and Without Erythroblastosis. Cornelia de Lange.—p. 273.
Dietetic Treatment of Psoriasis in Children. E. Schiff.—p. 299.
Genesis of Physiologic Leukorrhea in the New-Born. L. von Dobszay.—p. 306.

Fatty Degeneration of Liver by Excess of Cholesterol Ester.—Beumer points out that typhoid with the aspects of an acute yellow atrophy of the liver, although rare, has been known for decades. He describes a case with unusual metabolic aspects. A child, aged 8 years, developed symptoms of typhoid. Swelling of the liver developed on the eighth day, increased rapidly and was accompanied by icterus and coma. Between the eleventh day and the fatal outcome on the fourteenth day, the symptoms were those of acute yellow atrophy of the liver. In view of the high fever they had to be considered secondary to an infectious toxic process, but the definite diagnosis of typhoid was not reached until the last day, when typhoid bacilli were discovered, and it was concluded that the child had an atypical typhoid. The most noteworthy aspect of the necropsy was the enormously enlarged liver to three times the normal weight. Its uniform yellow color indicated fatty degeneration. Histologic examination disclosed in addition to lymphocytic and leukocytic cell accumulations extensive fat infiltration, and only the marginal zones showed dystrophic autolytic changes. Necrotic foci characteristic for typhoid were not found. The author points out that, as far as the etiology is concerned, acute yellow atrophy is not a disease entity. The conditions under which the liver succumbs to the various bacteriologic or metabolic toxins are still obscure. According to Ghon it is always an atrophy following a preceding fatty infiltration, and death may take place during the stage of fatty infiltration. The author found that the fat content of the kidneys was increased to twice the normal value but that the cholesterol content was normal. The total fat content of the liver did not exceed the values found in other cases of fatty liver, but the unusual aspect of this case lay in the extraordinarily large quantity of cholesterol. The severe fatty degeneration by an excess of cholesterol ester is the more surprising because it developed within a few days, in the course of which the patient took but little food. The endogenic sources of this increase in the cholesterol content remain obscure, but the author considers two possibilities: either an excessive cholesterol formation must have taken place (from the disintegrating liver cells or from other sources) or the cholesterol that was formed in normal quantities in the intermediary metabolism was prevented from being changed into bile acids and other products by the breakdown of the liver metabolism.

Klinische Wochenschrift, Berlin

14: 1665-1704 (Nov. 23) 1935. Partial Index

Heart Block of Type II. E. Edens.—p. 1669.
Intermediate Wave ST. B. Kisch.—p. 1670.
*Daily Blood Sugar Curves in Healthy and Diabetic Persons. G. Schöne and H. Zimmer.—p. 1672.
Seasonal Fluctuations in Occurrence of Acute Leukosis. J. Engelbreth-Holm.—p. 1677.
*Erythrocyte Sedimentation Speed in Pernicious Anemia. H. Reichel.—p. 1679.
Chemotherapy of Infectious Diseases. M. Oesterlin.—p. 1682.
*Diagnosis of Tuberculous Pulmonary Cavities: Their Differentiation from Circumscribed Interlobar Hydropneumothorax. H. Wachtel.—p. 1686.

Daily Blood Sugar Curves.—Schöne and Zimmer show that, although usually compensation of pancreatic insufficiency is readily accomplished during hospitalization, this aim is not always attained when the diabetic patient returns to his home and work, for at home the diet is not always strictly adhered to and the muscular exertion of work as well as the excitements of daily life influence the sugar metabolism. In order to estimate the ideal course of the blood sugar curve in a favorable adjustment of diet and insulin, the authors studied the blood sugar curve of working, healthy persons during the day and night hours. They discovered considerable fluctuations. In the rather low level of the diurnal curve and in the temporary reduction of the blood sugar values below 50 or even 40 mg. per hundred cubic centimeters they see the combined influence of food stimulus and of physical and mental fatigue on the regulation of the carbohydrate metabolism. These studies also indicated a certain dependence of this regulation of the carbohydrate metabolism on the constitution of a person (whether of a pyknic or of a leptosome type). On the basis of observations on normal persons, fluctuations in the daily blood sugar curve of from 100 to, at the most, 150 mg. seem optimal in diabetic patients who receive insulin and follow their occupation. The authors demonstrate with case histories that only the blood sugar curves that are taken with the consideration of the home conditions and of the occupational work can be the basis of the determination of the practical insulin requirements. In the physical exertion involved in the occupational activity of the diabetic patient the authors see a factor that exerts a favorable influence on the carbohydrate metabolism and permits a reduction of the insulin dosage.

Erythrocyte Sedimentation Speed in Pernicious Anemia.—Reichel shows that the sedimentation speed of the erythrocytes is greatly accelerated in patients with pernicious anemia. When remission begins, the sedimentation speed commences to decrease even before the number of erythrocytes and the hemoglobin content increase and generally reaches normal values when the hemoglobin content has reached 50 per cent. In the event of insufficient liver therapy with reticulocytic crisis but without subsequent remission of the anemia, the reduction in the sedimentation speed does not take place. The considerable reduction in the accelerated sedimentation is the simplest and surest sign of the onset of a remission.

Diagnosis of Pulmonary Cavities.—Wachtel investigated whether all pulmonary cavities that are considered tuberculous on the basis of roentgenoscopy are actually so. Roentgenoscopy differentiates two types of tuberculous pulmonary cavities. The first type appears among tuberculous infiltrations as an area of lesser density with an irregular outline. Within the area of lesser density a horizontal line may appear, which indicates the borderline between the fluid and gaseous contents of the cavity. The second type of cavity is round, as if cut out with a punch. It is filled with gas or partly with fluid and is surrounded by thin, sharply defined walls, around which there is only slight infiltration. Careful observations in the course of a number of years convinced the author that a circumscribed interlobar pleurisy, when its effusion becomes an interlobar hydropneumothorax by the admixture of gas, may simulate tuberculous cavities in the roentgenogram. The possibility that an interlobar hydropneumothorax may be of small dimension was first learned from the spontaneous cures of "silent early cavities." The author observed numerous cases in which roentgenologic changes that had been considered tuberculous cavities disappeared after a shorter or longer period, leaving an interlobar induration behind. It was found that especially the cavities of the second type represented in many cases a circumscribed, interlobar hydropneumothorax. The analysis of these roentgenograms disclosed that the thin, domelike upper outline of these "cavity" pictures corresponded to the upper part of the interlobar pleura. For the diagnosis of an interlobar hydropneumothorax the localization at the interlobar cleft is important; this can be recognized by roentgenoscopy on the rotated patient. Interlobar effusions without the admixture of air are quite common in the early course of pulmonary tuberculosis. In the roentgenogram they appear as intense shadows at the margin of the lobe. If small quantities of air from the alveoli enter these effusions, an interlobar hydropneumothorax develops as an accompanying symptom of early tuberculosis. It seems to be of only slight clinical importance, since it may persist

for several years without causing noticeable symptoms. Nevertheless, it is important to differentiate it from a tuberculous cavity with its grave implications. The author concludes that, if the roentgenograms of the circumscribed interlobar hydropneumothorax are correctly interpreted, the number of "early cavities," "silent cavities" or "spontaneously cured cavities" becomes so small that their existence seems questionable.

Medizinische Klinik, Berlin

31: 1521-1556 (Nov. 22) 1935. Partial Index

Orthostatic Albuminuria During Childhood. H. Knauer.—p. 1521.
So-Called Nervous Disturbances of Heart and Suitability for Sports. F. Gaisböck.—p. 1524.
Correct Massage, a Physiologic Method of Examination and Treatment Indispensable for Physician. A. Müller.—p. 1532.
*Early Diagnosis and Prognosis of Diseases of Myocardium. A. Leimdörfer.—p. 1536.
Spontaneous Cure of Carcinoma. O. Hajek.—p. 1539.

Early Diagnosis of Myocardial Disorders.—Leimdörfer describes a method of examination by means of which he detects latent myocardial disorders. The patient stands erect for ten or fifteen minutes. The reaction of the heart to this exertion is then measured by means of the electrocardiograph, and the electrocardiogram thus obtained is compared with one taken while the patient is reclining. In order to arrive at a correct estimation, it proved necessary to make control tests with the electrocardiogram in various respiratory phases. In patients without heart disease, the electrocardiograms revealed only those changes that were caused by changes in the diaphragmatic position (partly as the result of the respiratory changes, partly as the result of standing) and by the changing tonus of the vagus and sympathicus. The author emphasizes that in the patients with a normal heart the after wave, during the respiratory arrest following a deep expiration, is always noticeably enlarged in the reclining as well as in the erect position. In patients with heart disease but without clinical signs of myocardial impairment in whom the electrocardiogram taken during the reclining position showed no deviation from the norm, the electrocardiogram taken during the erect position (quiet breathing) showed an iso-electric or a diphasic after wave in leads 1 and 2. This pathologic after wave was evident also in the electrocardiographic control made during the respiratory arrest following a deep expiration. In brief, during the erect position these cardiac patients showed signs exhibited by patients with manifest myocardial defects during the reclining position. On the basis of this observation it was concluded that these cardiac patients have a latent myocardial disorder. The author describes observations on patients with polyarthritis, exophthalmic goiter and influenza. He thinks that especial attention should be paid to the detection of myocardial impairments in patients with influenza. He concludes that the technic mentioned is valuable in determining the functional capacity of the cardiac muscle and that, together with other methods, it might be used to determine the adequacy of the cardiac function before operations or before gymnastic or other physical exertions.

Zentralblatt für Gynäkologie, Leipzig

59: 2769-2832 (Nov. 23) 1935

Unilateral Absence of Ovary. A. Bock.—p. 2770.
Unilateral Ovarian Aplasia with Homolateral Rudimentary Tube. J. Ostenfeld.—p. 2771.
*Development of Isolated Peripheral Radial Paralysis in the New-Born. H. Krafft.—p. 2773.
Eugenic Sterilization in Women. K. Kayser.—p. 2776.
Prediction of Sex According to Schöner and Marble's Law of Statistical Compensation. O. Schöner.—p. 2778.
Malaria and Puerperium. K. Provos.—p. 2781.
*Connection Between Function of Mammary Gland and Hormones of Incretory Glands. W. Sawizki.—p. 2784.

Isolated Peripheral Radial Paralysis in the New-Born.—Krafft evaluates the various factors accepted as having etiologic significance in isolated peripheral radial paralysis and describes a case in which pressure of the uterine wall seems to have been the cause. He points out that uterine pressure may be exerted during gestation or during the process of delivery. He thinks that in the reported case it was the pressure of the uterine contractions which caused the radial paralysis, for there existed also a subcutaneous adiponecrosis. In this connection he stresses that Schoedel has advanced evidence to the effect that in the course of a prolonged delivery the repeated pressure from the uterine contractions is sufficient to produce extensive adiponecrosis. In the reported case the delivery was extremely prolonged and the radial paralysis of the right arm was accompanied by adiponecrosis of the external surfaces of both upper arms. On the right side the infiltration extended over the radial point into the region of the deltoid muscle, while on the left arm the adiponecrosis was only in the region of the deltoid muscle. Radial paralysis developed only on the right side, where the pressure reached the radial point. Thus the case demonstrates the significance of the pressure from uterine contractions as a possible cause of congenital radial paralysis. This pressure is especially effective in case of premature rupture of the bag of waters, secondary weakness of labor pains, narrow pelvis and large fetus. The author recommends faradization to ensure better nutrition of the nerve and to prevent muscular atrophy. He began this on the eleventh day. He also advises daily massage and movements of the arm. The infiltrations disappeared in the fourth week, at which time the arm could be moved in the normal manner.

Function of Mammary Gland and Hormones.—Sawizki shows that the administration of estrogenic substance to puerperal women in most cases prevents lactation and the swelling of the breasts. If estrogenic substance is given together with the factor in pregnancy urine, this effect is even more noticeable. The author points out that the administration of these substances seems advisable when cessation of lactation is aimed at (death of the child). He thinks that this mode of treatment may eventually replace the measures formerly employed to produce cessation of lactation. His observations were made on twenty-nine women: fifteen were given only estrogenic substance and fourteen were treated with both substances. Of the fifteen women, nine responded well; of the fourteen, ten responded favorably. At first the author gave the injections subcutaneously but, because this procedure proved painful, intragluteal injection was resorted to. He injected two or three times daily, in all from 200 to 800 mouse units of estrogenic substance and also from 50 to 100 rat units of the factor in pregnancy urine every day. The milk secretion ceased after four or five days. The author concedes that his observations will have to be verified on a larger material.

Klinicheskaya Meditsina, Moscow

13: 1421-1582 (Oct.) 1935

Tuberculosis and Pathergy. M. M. Soskind.—p. 1443.
Cardiac Syndromes in Tuberculosis. T. D. Kan.—p. 1454.
*Carbohydrate and Chloride Metabolism in Pneumonia. S. N. Sinelnikov, P. M. Perchik and O. N. Doroklova.—p. 1474.
Basal Metabolism in Pulmonary Tuberculosis. N. A. Shmelev and M. M. Davydova.—p. 1482.
*Effect of Oxygen Inhalations on Gaseous Exchange of Blood and Tissue Respiration in Pneumonia. N. A. Kurshakov and N. K. Kukhtin.—p. 1490.
*Cod Liver Oil Treatment of Infected Wounds. V. K. Tumanskiy and I. A. Yatsevich.—p. 1528.

Carbohydrate and Chloride Metabolism in Pneumonia.—Sinelnikov and his associates conclude, on the basis of their studies of the blood sugar and the urinary chlorides in twenty-three cases of pneumonia, that the latter is a condition of a pathologic nondiabetic acidosis. Physicochemical alterations in the tissue colloids take place because of the upset in the acid-base balance in favor of acidosis giving rise to alterations in the carbohydrate and chloride metabolism. The authors found that the blood sugar in all their cases was raised above the normal (from 120 to 160 mg.) during the stage of hyperpyrexia and that these figures persisted until the crisis. There was a simultaneous sharp fall in the excretion of chlorides in the urine (from 0.58 to 1.3 mg. of sodium chloride in twenty-four hours) which persisted until the critical fall of the temperature. The amount of urine excreted during the stage of pyrexia averaged from 500 to 800 cc. in twenty-four hours. Following the crisis the blood sugar returns to normal, the urinary excretion rises and with it the amount of excreted sodium chloride increases to reach the normal on about the eighteenth or twentieth day. The increase in the excreted sodium chloride is more marked than that of diuresis. Application of insulin therapy resulted

in lowering the mortality in their series to almost zero. The chloride metabolism was rapidly restored to normal with the simultaneous lowering of the hyperglycemia.

Oxygen Inhalations in Pneumonia. — Kurshakov and Kukhtin found a high grade anoxemia in the twenty-four cases of pneumonia studied by them. The effect of oxygen inhalations was to increase the oxygen content of the arterial blood and the oxygen combining power up to normal even in the severe types of pneumonia. Oxygen inhalations increase the percentage of oxygen utilization by the tissues. The favorable effect on anoxemia was observed as late as one hour after eight to ten minute inhalations. This, in the authors' opinion, depends on improved tissue respiration. They conclude that oxygen inhalations are indicated in every case of pneumonia.

Cod Liver Oil Treatment of Infected Wounds. — Tumanskiy and Yatsevich found that the growth of streptococci in sterilized and nonsterilized cod liver oil ceases after one hour. The growth of staphylococci under the same conditions lasts six hours. Experiments showed that glycerin possesses the same bactericidal qualities as cod liver oil. The effect of adding sterile petrolatum to cod liver oil was to lower the bactericidal power of the latter, permitting the streptococci and staphylococci to grow seventy-two hours. The growth of streptococci and staphylococci in sterile petrolatum continued for fifteen days. The authors confirmed the bactericidal qualities of cod liver oil in their experiments on guinea-pigs. The application of cod liver oil dressings in fifty-three patients with infected wounds demonstrated the effectiveness of this method. This was particularly effective in the treatment of granulating wounds of the soft tissues.

Vrachebnoe Delo, Kharkov

18: 675-746 (No. 8) 1935. Partial Index

Pathogenesis of Trachoma. E. F. Levkoeva.—p. 675.
Malaria and the Eye. A. E. Goldfeder and V. D. Moldovskaya-Krichevskaya.—p. 683.
*Effect of Artificial Pneumothorax on Course of Epilepsy. I. W. Slivko and P. B. Torkanovskiy.—p. 696.
Prognosis of Chronic Tonsillitis in Children. F. D. Gurevich.—p. 700.

Effect of Artificial Pneumothorax in Epilepsy.—According to Slivko and Torkanovskiy, the effect on epilepsy of small injections of gas, not to exceed 200 cc., in the pleural cavity was either to increase the number of seizures or not to influence the course in any way. Further introduction into both pleural cavities of large quantities of gas up to 1,000 cc. had the effect of diminishing or entirely terminating the seizures for as long as six weeks in cases in which they occurred daily and several times daily. The seizures returned with absorption of the gas. In two patients, in whom the pneumothorax was maintained for six months, the course of the disease was much improved, as manifested by the cessation of seizures and improvement in the general health. The authors practiced multiple refills but never observed the occurrence of a seizure in the course of an insufflation. They did not observe a single case of pleurisy, which they attribute to the fact that they were dealing with a noninfected pleura. Epileptic seizures occurring after induction of a pneumothorax were as a rule shorter and less severe. They feel that the coexistence of pulmonary tuberculosis is no contraindication to the induction of a pneumothorax.

Acta Medica Scandinavica, Stockholm

86: 455-592 (Nov. 21) 1935

Investigations on Influence of Experimental Diminution of Mobility of Thorax on Oxygen Debt After Graduated Work. H. C. Jacobæus, G. Nylin and B. Almberg.—p. 455.
Is Creatinine Clearance an Expression of Filtration Through Glomeruli? Studies on Sugar and Urea Excretion. P. Iversen and T. Bjering.—p. 459.
Chrysotherapy of Chronic Polyarthritis. A. Mester.—p. 469.
Effect of Different Forms of Diet on External Secretion of Pancreas. L. Abramson.—p. 478.
Chloramine Allergy. E. B. Salén.—p. 486.
*Occurrence of So-Called Latent Allergy. E. B. Salén and C. Juhlin-Dannfelt.—p. 505.
*Thermostable, Noncomplex (Auto) Hemolysin in Transitory Cold Hemoglobinuria. E. B. Salén.—p. 570.

So-Called Latent Allergy. — Salén and Juhlin-Dannfelt made tests on 432 persons belonging to different occupational groups (bakers, cavalry soldiers, veterinarians, actors, warehouse employees and garment workers) in order to determine the incidence of sensitization against certain occupational allergens, and how often this sensitization leads to manifest allergy. The results seem to confirm the specificity of the positive skin reactions and of the allergen extracts. All allergen extracts were controlled in tests on nonallergic persons. By making cross tests with the different extracts in the various groups, additional control material was obtained. The results of these tests are recorded in tables, which indicate, for instance, that a rye extract gave positive skin reactions in 38 per cent of the persons connected with the baking industry, whereas in the other groups only 4 or 5 per cent gave positive reactions with this extract. The majority of the latter had clinical signs of allergy and all gave positive reactions to the allergens of their occupations. The authors reach the conclusion that there is a rather large group of patients with latent allergy. They point out that, on the basis of their observations, a revision is necessary in the hitherto generally accepted interpretation of certain cutaneous problems in allergy. They think that the theory of a pathologically increased permeability of the skin and mucous membranes as a necessary (or chief) requirement for the resorption of allergens, that is, for their function as sensitizers and eliciters, can no longer be accepted. On the contrary, it must be assumed that such a resorption as a rule takes place through intact mucous membranes and probably also through the normal skin. It is likely that in the course of this resorption sensitization takes place in a comparatively physiologic manner. The existence of a relatively large number of persons with latent allergy necessitates a modification of the generally accepted theory that sensitization always implies the clinical manifestation of allergy. They think that the question should no longer be why some persons become sensitized while others do not, but rather why some sensitized persons have a clinically manifest allergy and others not. They think that this new formulation of the problem will create room for a number of clinical aspects in connection with allergy, which could not be explained on the basis of the former theory. They are convinced that the immunity condition (in its broadest meaning) plays a significant part in the problem of allergy.

Transitory Hemoglobinuria. — Salén's patient has been under his observation for more than a year and presents the symptoms of acrocyanosis and transitory hemoglobinuria, which appear only after exposure to cold. The hemoglobinuria could be elicited by local cooling. The case presents some clinical deviations from the typical cold hemoglobinuria, for the transitory manifestations of hemoglobinuria are not accompanied by shock, increase in temperature or other general symptoms. It proved impossible to demonstrate a hemoclastic crisis in the course of the provocation experiments. The serologic analysis of this case never disclosed a complex hemolysin of the Donath-Landsteiner type. However, the blood fluid (serum and plasma) contained an agglutinating and hemolyzing factor. The blood temperature had to be reduced to 30 C. before agglutination or hemolysis would take place. A further reduction in the temperature increased the agglutination and hemolysis. The serum was in both respects active against the patient's own erythrocytes as well as against the erythrocytes of another person (independent of the group differences). Neither of the two factors was destroyed by heating the serum for forty-five minutes to 59 C. The hemolyzing factor was thermostable. Moreover, it was of a noncomplex nature; that is, it functioned without the aid of a lytic component. The author thinks that this agglutinin is probably identical with the panhemo-agglutinin described by Mino and others. The fact that experiments with "purified" agglutinins, according to Landsteiner, yielded a solution with agglutinating but without hemolyzing action and that the patient's urine contained a hemolyzing but not an agglutinating substance makes it probable that the two functions are exerted by different substances. A review of the literature convinced the author that the occurrence of a strongly active panhemo-agglutinin is extremely rare and that in none of the reported cases did there exist in addition to the agglutinating function also a hemolyzing one. He thinks that the reported case represents a form of transitory cold hemoglobinuria not described before.